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# Turfgrass



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MANAGEMENT

## Ratho's revival

Restoring Australia's oldest golf course

## Profile

Barry Cox

## Business and the big dry

How the trade is faring

## Research

Overseeding couch fairways  
Fungicide application effects



## Flemington's \$10m flutter

On track for  
Spring Carnival 2007



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## COVER: Flemington

The new kikuyu-based Course Proper at Flemington which has been totally reconstructed over the past summer to the tune of \$10m.

**Main photo:** Brett Robinson. **Inset pictures:** Courtesy of John Harding, Cardno Young.



### Ratho's revival

20

Of all the 60-odd nine-hole golf courses in Tasmania, there is one which holds a unique place in Australia's golfing history. Harking back to the days of long-nosed woods and 'feathery' balls, Ratho Golf Links is the oldest golf course in Australia and, as ATM discovers, restoration plans are underway to ensure it remains a vital part of Australia's rich golfing heritage.

### OPINION

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The drought currently afflicting many parts of Australia has caused widespread havoc for golf course superintendents and turf managers. But how has it impacted on the trade? ATM asks four companies how they have fared with the drought and what, if any, positives they have been able to draw from one of the industry's most trying periods.

### RESEARCH

#### Evaluating grasses for overseeding couch fairways

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Overseeding couch fairways is a common practice used by golf courses to provide

### FLEMINGTON'S \$10M FLUTTER

6

Home to the famous Melbourne Cup and Spring Carnival, Flemington has held a unique place in the Australian racing industry for more than 140 years. Horses and jockeys have been immortalised at the venue, while many a punter has lost or won a fortune riding the back of their fancy. At Flemington's heart is the Course Proper and from November 2006 to March 2007 the Victoria Racing Club took one of its biggest punts and made the decision to completely reconstruct the hallowed track, converting it to a warm-season kikuyu base. ATM saddles up and goes behind the scenes to see how one of the racing industry's largest and most groundbreaking projects has come to fruition.

winter colour as well as better tolerance of cart traffic, divoting and weed invasion. From 2004 to 2006, the USGA, together with the GCSAA and NTEP, conducted the second national trial of grasses used to overseed couch fairways. The study compared 31 cultivars, blends, and mixtures for overseeding when tested under actual golf course conditions.

### Fungicide application effects

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Researchers at Cornell University tested the hypothesis that repeated applications of fungicides to putting greens would have major impacts on microbial populations of both foliar and soil-borne microbes. Surprisingly, this was not that case.



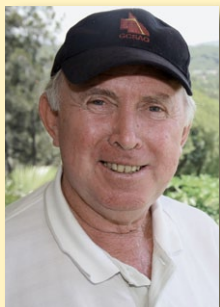
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### Cox back on course 14

For the past 20 years Barry Cox has played an integral role in the development of the GCSAQ. Last year the former tomato

farmer-cum-turf manager received the ultimate recognition from his peers when he was awarded life membership of the association. However, all that flashed before his eyes earlier this year when he underwent heart bypass surgery. ATM caught up with the convalescing Ocean Shores superintendent and looks back at a rewarding career which will be hard to let go of.

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 Terry Watson (VRC)  
 David Westall (Scotts)

# the track that tops the nation



I've never been a fan of horses. It probably goes back to when I was 11 and on a week-long school camp in the rural New Zealand township of Matamata. One of the activities our teachers had organised was a day-long horse trek and without any experience whatsoever we all nervously saddled up and trotted off through the scenic bushland.

My horse was named Joey and I clearly remember our over-enthusiastic guide informing me that Joey, being the smallest horse of the lot, was a placid and gentle creature. You can see where this story is going, can't you...

Well, we were no more than 10 minutes into the trek when one of my classmates (he is currently spending him in Her Majesty's Service, but that's another story...) decided it would be a great idea to taunt poor little Joey. As you can imagine Joey didn't take too kindly to that and started to get a bit flighty.

All of a sudden, hell broke loose. The horse in front of me, sensing Joey's discomfort, got all worked up as well and decided to bolt. Joey, god bless him, followed suit. For what seemed like an eternity, Joey bounded down the track in pursuit of his stablemate and eventually after about 500m decided he had had enough. Somehow I had managed to cling on but my other classmate wasn't so lucky and ended up being thrown. To top things off, as I was standing next to Joey while our guide was trying to calm him down after the ordeal, the chestnut goes and pees all over my foot! As I said, me and horses, not a good mix.

In saying all that though, I must admit I like a punt on the gee-gees every now and then and if there's one race which always gets the hand dipping into the hip pocket come November each year it's the Melbourne Cup. It truly is a race that stops a nation and the hallowed turf it is raced on, Flemington, has for over 140 years been the spiritual home of the Australian racing industry.

Just a few days after Japanese stallion Delta Blues became just the third foreign horse to win the Cup last year, the track that jockey Yasunari Iwata had guided his steed around to claim the prized trophy was gone.

In one of the biggest projects it has ever undertaken, the Victoria Racing Club embarked upon the complete reconstruction of the Course Proper and over the past six months Flemington has undergone an impressive transformation. Drainage issues that once dogged the track are now a thing of the past, while in a major departure for the club the track is now kikuyu-based.

In this edition of ATM we take an in-depth look at how the project has come to fruition after some major delays and talk to Flemington general manager Terry Watson about how it has set a benchmark for the racing industry.

Staying with the theme of reconstruction, elsewhere in this edition we look at the ambitious plans to restore Australia's oldest golf course – Ratho Golf Links in Tasmania – while we also profile retiring golf course superintendent Barry Cox who was last year awarded life membership of the GCSAQ.

Finally, ATM made a slight error in its farewell piece on Vince Church in the last edition. We gave Vince's date of birth as 1 January, 1915. In fact he was born on 30 January, 1915. By all accounts the Pennant Hills Golf Club groundstaff reunion held in March was a huge success and



I have it on good authority that Vince's memory was well and truly celebrated. Enjoy the read.

**Brett Robinson**  
 Editor

# Globe



*More than 30 years  
 in the making*



**A** The challenges for golf course superintendents are ever increasing and the past 12 months have extended these well beyond any reasonable expectation. Drought, extreme temperatures and minimal water has stretched the capabilities of golf course superintendents and their staff while attempting to maintain facilities to an exacting high standard. The word sustainability again comes to mind in questioning whether it is possible to maintain this effort in a changing environment.

It often falls on the golf course superintendent to take the lead role in numerous activities that can often take him or her beyond their original training. What other profession offers the challenges of managing a diverse work force, developing new water sources during droughts, managing the environment and dealing with a myriad of legislative requirements, while at the same time meeting the increasing expectations of golfers and management.

Producing consistent and high quality playing surfaces is the primary role of the golf course superintendent, however, because of the complexities of managing golf courses, superintendents need to develop their expertise in a diverse number of areas. By default, they need to have knowledge in many areas other than turf, including tree management, water resource management, staff management, planning and budgeting with an underlying raft of legislation that dictates work practices and interaction with the surrounding environment.

Golf clubs are unique in that they are often governed by a committee or board that

has a range of expertise in many professions other than turf maintenance. The golf course superintendent faces the challenge of advising and leading, while answering a diverse range of questions that often appear to be trite and unimportant. Dealing with these questions and at the same time not embarrassing the well-intentioned is an art in itself. Managing upwards is undoubtedly the greatest and most difficult skill for golf course superintendents to develop.

There is little doubt that for the modern superintendent ongoing education remains the key to survival in these challenging times. Understanding there is a knowledge gap is not an admission of failure but acknowledging that in an ever changing world we cannot be expected to know everything.

Committees and boards are interested in solutions. Everyone is faced with problems, however, it is how we research the problem and then develop a solution that is the true skill of the competent manager. Committees are not interested in the answer "it cannot be done" without research and costings. Research the problem, develop the options and cost them and then present them to the committee or board. Where appropriate, bring in the necessary expertise to assist providing a suitable position paper.

A key role of the AGCSA is to provide educational opportunities and this is done through the annual Australian Turfgrass Conference and twice-yearly roving workshops. This year's conference heads to Cairns from 23-27 July and the theme has a strong focus on the challenges of maintaining turf in a



**AGCSA**

changing climate. Is the current drought part of a normal cycle or is it a permanent change? Come and hear from the experts on this most topical of subjects as it will have an impact on how your turf is managed in the future.

The conference will also have several sessions on management and, in particular, 'managing upwards', as well as a keynote presentation on how the new industrial relations laws are impacting on golf course superintendents and their staff.

The three-day education programme has something for everyone and we encourage that all AGCSA members and the wider turf community attend what is set to be one of the most topical conferences in recent times. A delegate registration brochure was sent out in March and you can register online through the AGCSA website or by filling out a registration form. We look forward to seeing you there. 🌱



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It has been a project that has thrown up many interesting challenges, but the reconstruction of the Course Proper at Flemington will mean a much more sustainable and manageable future according to general manager Terry Watson



# Flemington's \$10m Flutter On track for the 2007 Spring

When the board of the Victoria Racing Club decided to give the go ahead for the total reconstruction of the Course Proper at the famous Flemington racecourse, it did so in the knowledge that nothing of this magnitude had been undertaken before in the club's rich history. With the new kikuyu-based track now bedding down and a new dedicated drainage system alleviating management issues of the past, Flemington is well on track to debut its new look come the 2007 Spring Carnival. ATM catches up with Flemington general manager Terry Watson to look back at a project which, despite having many challenging facets, has set a new benchmark for the Australian racing industry.

Since hosting the very first Melbourne Cup in 1861, Flemington racecourse in Melbourne has established itself as the spiritual home of the Australia racing industry. Over the years the hallowed turf has immortalised horses, jockeys and trainers alike and drawn contenders from around the globe who desperately try to claim one of racing's most prized trophies.

The Spring Carnival is one of the great Australian sporting spectacles and every year all eyes are drawn to Flemington, particularly on that first Tuesday of November. At the heart of the carnival lies the stage on which all the drama and excitement is played out on – the Course Proper.

Up until last year's Melbourne Cup it had remained relatively untouched, however, in one of the biggest decisions in its proud history, the board of the Victoria Racing Club (VRC), which has called Flemington home for the past 143 years, decided it was time to completely reconstruct the Course Proper to ensure a more manageable and sustainable future.

At a cost of \$10million, the reconstruction, which started last November, has seen a





# Carnival

number of groundbreaking changes to Flemington including the installation of a dedicated drainage system, a new uniform profile and, in the most significant departure, a switch from a ryegrass to kikuyu-based track.

For Flemington general manager Terry Watson, who came on board the VRC in 2001 after a long association with Caulfield, it rates as one of the biggest projects he has ever been involved with during his 40-plus years in the racing industry and one that he hopes has set a new benchmark for the industry in Australia.

## A NEW ERA BEGINS

No sooner had Japanese stallion Delta Blues won the 2006 Melbourne Cup than the reconstruction process began in earnest. A road profiler machine was brought in to strip the old track down to a depth of 500mm and, using some of the existing topsoil, new levels were created for the subgrade (track foundation) which was then stabilised with a mixture of lime and cement.

The design of the new track was carried out by Cardno Young and according to project manager John Harding the differences in the

tolerances between the old and new track would be “like comparing a country road to a modern freeway”. The design of the new track involves a revised geometry including a one-way track crossfall easing into banked turns which will provide a more consistent running for horses.

Once the subgrade had been stabilised, primarily due to the poor underlying soil (Coode Island silt), more than 25km of agricultural drains were then laid across the track, all feeding into a collector drain connected to a new dedicated pumped stormwater system.

A 100mm gravel drainage blanket was then spread across the track followed by a 300mm layer of an engineered growing medium with amendments (chicken manure) then incorporated. The growing medium – a mixture of two white sands and a grey sand specifically chosen by the VRC for stability, hydraulic conductivity and moisture retention – was manufactured by Frank Vella Sands in Lang Lang and prior to the project starting a large portion was stockpiled nearby Flemington at Deer Park.

Once the amendments were added, 124,000m<sup>2</sup> of turf grown at Anco's Torquay production farm was then hand-laid in five stages during February and March 2007 (**turn to pages 11 and 12 to read more about the growing, harvesting, laying and establishing the new Flemington turf**). The final sod of the new kikuyu-based turf was rolled out on 19 March and after a four-week maintenance period each section was handed back to the VRC. At the time of writing just one section of the track remained to be handed over,

while work was still progressing with the new Birdcage, main lawn and The Elms areas, all of which will be completed before the Spring Carnival.

## TAKING A PUNT

When that final roll of turf was laid on the Course Proper, it was a kind of euphoric moment for Watson. It signalled the end of one of the most critical phases in what has been an at times frustrating project, but one which has ultimately set up Flemington to remain as a focal point of the Australian racing industry.

While Watson was a relieved man, no doubt the VRC board also breathed a collective sigh of relief. Their decision to totally reconstruct the famous Flemington layout – the first total reconstruction undertaken in over 140 years – wasn't one that was taken lightly and with the many issues that presented along the way there were a few occasions where anxiety levels went off the scale.

The entire reconstruction has been full of challenges from day one and as Watson will attest it has been an exercise in patience and persistence, both on and off the track. One of the biggest initial hurdles to overcome was convincing the VRC board to bite the bullet and commit to the reconstruction which meant agreeing to make some groundbreaking changes to the track in terms of its design, surface make-up and drainage characteristics.

“Historically it wasn't a decision that came easily” reflects Watson. “Flemington hasn't been altered to this extent in its history and we were proposing some major changes to the track. The famous Straight Six (1200m straight) ►



Laying of the new kikuyu-based track began on 14 February and finished 20 March





The view from the top of Flemington's famous Straight Six shortly after New Year 2007

now has a one-way crossfall where previously there had always been a crown in the centre. We changed the cambers coming into and out of the turns to make them more horse-friendly and we raised the track to help with drainage. It's those sorts of changes that will hopefully make this new design a great success. A lot of thought has gone into it and I think we have got it right.

"The board knew that the track needed to be rebuilt at some time but there was always the fear in the back of their minds that what if something went wrong and the track was unable to be host the following Spring Carnival. It just wasn't going to be a consideration that the Melbourne Cup would have to be shifted from Flemington. But I know they are very relieved to see the track now complete and that this coming Spring Carnival will go ahead without any problem.

"At the end of the day, however, the old track had well and truly had its day. When we took the top off the track and saw what was underneath it is quite amazing that it was actually able to perform as well as it did over the past three or four years. It was quite a sight."

The decision to switch to a kikuyu base was also a difficult one for the VRC board to go with and it took plenty of convincing on Watson's behalf to sway the board to come around.

"I've always liked kikuyu," admits Watson. "I know it hasn't been a big part of Victorian tracks, like it is in other states, but when I was at Caulfield we had it in our inside training track and it amazed me how well it stood up all year round. Taking that on board, we thought that if we looked at the kikuyu as our base for the sod, but then oversowed with some bluegrass and a mixture of ryegrasses, it could end up being the ideal product for a racetrack all year round.

"It was to some people's thinking a bit out of left field to have kikuyu on a Melbourne track, but I think it's going to be the surface of the future. If it is a success here, and there's no reason why it shouldn't, it could become the benchmark for other racecourses."

Then there were the delays. Before any reconstruction work could be carried out, the VRC wanted to ensure that the new track would be adequately protected from the Maribyrnong River should it flood. The decision to build a

floodwall along the course's boundary with the river was a crucial first step, but getting it past the local council and water authority proved more difficult than expected, resulting in major delays.

While "bitterly disappointing" at the time, in hindsight Watson believes the delays ultimately meant that the VRC has ended up with a better product. The extra time allowed the club to investigate certain aspects of the project more thoroughly and it also gave them the chance to learn more about what it was exactly they were trying to achieve.

Another unexpected spin-off from the delays came when the Melbourne Racing Club approached the VRC in 2005 to see if it could use the turf growing at Anco's Torquay production farm to re-lay Caulfield. Giving the go ahead, 70,000m<sup>2</sup> of the new turf was laid following the 2005 Caulfield Cup and subsequently that has enabled the VRC to monitor its progress and performance.

"From all reports the jockeys and trainers have been very happy with the new Caulfield track," says Watson. "I know Caulfield is extremely happy with the way it has performed, so taking all that on board it naturally gives us more confidence in how it will perform here. I know our board members are very pleased to see the accolades Caulfield is getting because early on a number of them were pretty hesitant about going to kikuyu. But seeing how well the track has stood up, I think that has changed their perception a bit and eased any fears they had."

## A SUSTAINABLE FUTURE

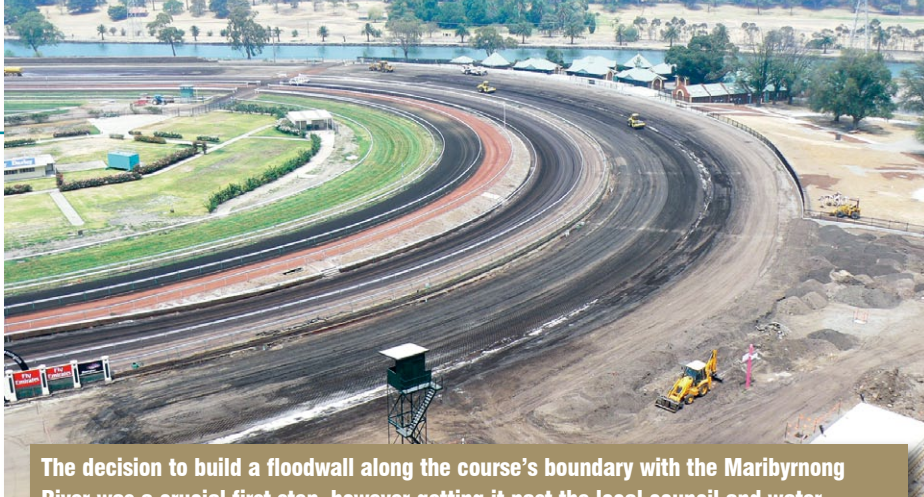
While the switch to a kikuyu-based track has been one of the major talking points of the redevelopment, another significant aspect of the project has been the creation of a dedicated pumped drainage system for the Course Proper. One of the key requirements of the VRC when the project was first put forward was that the track have a stand-alone drainage system that could be controlled and kept consistent.

Drainage has always been an issue at Flemington due to its location on the Maribyrnong River floodplain and before reconstruction it solely relied on a gravity fed system. That had one major drawback in that if river levels rose too high, the system would back up and salt water could flow in and flood sections of the track.



One of the key requirements of the VRC was that the Course Proper have a stand-alone drainage system





The decision to build a floodwall along the course's boundary with the Maribyrnong River was a crucial first step, however getting it past the local council and water authority proved difficult and resulted in delays to the project start date

Watson has a great black and white photograph on the wall of his office of just such a situation in May 1974 which shows the entire Straight Six inundated by salt water after the Maribyrnong poured into the course.

"The new pumped system is quite unique and will remove any threat posed by tidal flows of the river which until this project started had impeded the effective drainage of the whole track," says Watson.

"We now have a system where we can redirect water back to storage areas and with our desire to reduce our reliance on potable

water, this will enable us to reuse the water on our lawns or gardens in the future.

"As part of this whole project we have been looking ahead to see how we can use a lot less potable water at Flemington. We would like to think we can water all the tracks and the lawns with reclaimed water and we have had consultants working for us looking at both sewer mining and desalination options.

"We have had a small trial going the past couple of years with a sewer mining plant and it worked very well, but our latest advice is that desalination looks to be the most economical

route for us to take due to our proximity to the river. We actually use salt water from the river on the artificial tracks at the moment but we would like think we could be able to convert it for use on the turf as well."

Aside from drainage, the new track has also remedied a number of other management issues that plagued the old, predominantly ryegrass-based track. One of the main gripes was the track's inconsistency. Over a number of years the track had numerous sections rebuilt with different materials and specifications resulting in little uniformity across the entire track. Certain areas would react differently to watering levels or to heat stress and there was a fair amount of *Poa annua* in the sward.

In undertaking the reconstruction, the VRC has gone to great lengths to ensure that the new track has a uniform profile across its entire length thus reducing the need to address a variety of track conditions brought about by inconsistent drainage and soil conditions.

"We're looking forward to a much more manageable track," says Watson. "Overall I

CONTINUED ON PAGE 12

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Anco harvested 124,000m<sup>2</sup> of turf at its Torquay production farm for the upgrade of the Course Proper at Flemington

For Victorian-based turf producer Anco, its involvement in the reconstruction of the Course Proper at Flemington comes on the back of a number of successful projects at other racetracks including Caulfield, Sandown and Mornington. Flemington, however, clearly ranks as one of the company's biggest projects to date and according to manager Bruce Stephens it couldn't have come at a better time given the difficult times Victorian turf producers are currently facing.

"From our point of view it has been a real bonus because it has come at the right time in what has been a critical year for survival," says Stephens. "The drought has obviously had a huge impact on turf producers in Victoria, so to have this project come when it did has been a godsend."

Anco first became involved in the reconstruction project back in early 2002 when it was commissioned by the Victoria Racing Club (VRC) to grow the turf for the new track. Following a series of extensive tests at Anco's Torquay-based production farm (which involved looking at the quality of sands for particle size distribution and drainage) three paddocks were selected in which to grow the turf.

The paddocks were fumigated and planted up with kikuyu, while at the same time the top centimetre of topsoil from one of the paddocks, which had a high infiltration rate, was stockpiled with the view of using it to topdress the other paddocks as required.



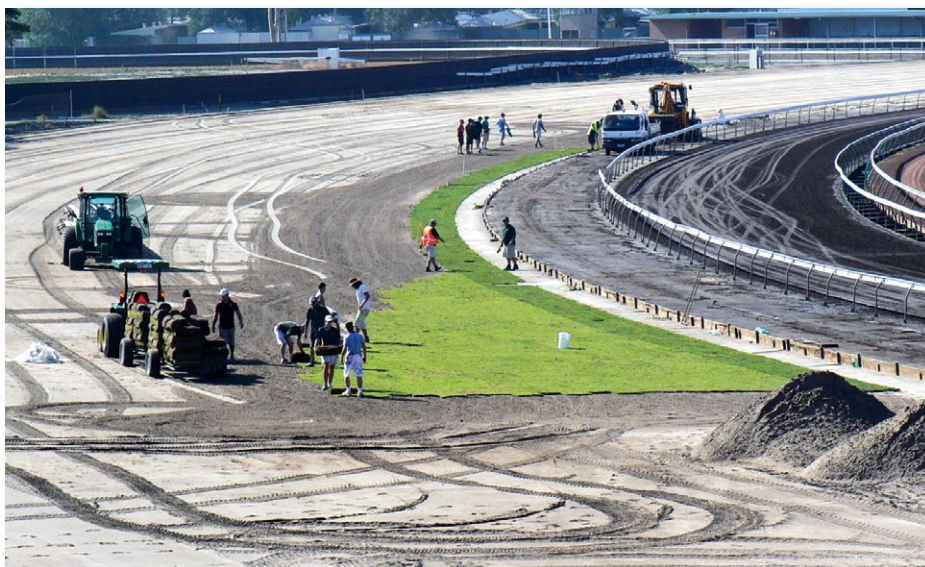
# Keeping Flemington on track

Growing, harvesting and establishing over 154,000 square metres of turf for one of the racing industry's biggest track reconstruction projects is certainly a feather in any turf producer's cap. ATM talks with Anco manager Bruce Stephens about the company's involvement in the upgrade of the Course Proper at Flemington.

Meanwhile, due to delays with the flood-wall construction at Flemington, the entire track reconstruction was put on hold for a number of years. Despite that delay Anco kept

the paddocks for the VRC and in 2005 got permission to sell 70,000m<sup>2</sup> of the Flemington turf to the Melbourne Racing Club, which was looking to re-lay the track at Caulfield.

With a start date of 2006 finally confirmed for the Flemington upgrade, Anco put its Koro field topmaker across each paddock and removed all thatch and vegetative material leaving a clean surface except for the kikuyu stolons and rhizomes. After waiting for a period of re-growth Anco then oversowed the paddocks in September 2006 with the required mixture specified by the VRC – a blend of three different pasture-type perennial ryegrasses and a Kentucky bluegrass. Once that was complete the paddocks were monitored for nematode



The Flemington track was laid in five stages with between 7000m<sup>2</sup> and 10,000m<sup>2</sup> laid a day



activity and disease, while a nutritional programme ensured that the turf would be at optimum health come harvesting.

As with every other part of the reconstruction project, the VRC closely monitored the progress of the turf and every fortnight up until the first cut a party comprising of Flemington track manager Terry Watson, John Harding (Cardno Young) and Terry Woodcock (SportsTurf Consultants) would inspect the paddocks at Torquay.

## ROLLING OUT

Originally scheduled for late January, the first harvest didn't start until the evening of 13 February, 2007. Ironically that same night it bucketed down, providing temporary respite to the region which is currently suffering under Stage 4 water restrictions.

Despite the welcome rain, the first semis were loaded and sent on their way with the first pellets of turf ready for laying on the morning of Valentine's Day. Due to training hours, the turf could only be delivered to the track between 8.30am and 3am which meant Anco started harvesting at around 5pm the night before and worked into the night.

Four semi-loads were sent up each night and delivered the turf between 7pm and midnight ready for laying the following morning once the horses were off the inside tracks. Once that lot had been laid another four semi loads that had been cut early in the morning would be ready for laying in the afternoon.

"The turf was never more than 12-16 hours old from the time of harvesting to the time it was laid," says Stephens. "Despite the fact that we had some very warm days during harvesting and laying, we hardly lost any rolls at all. The temperature inside the pellets can get fairly warm and you generally lose a roll or two on those 40-degree days, but with the new Trebro auto stacker harvester and the roll size we didn't have any of those issues.

"Cutting at night and early morning helped, as well as the fact that there was a very short turnaround from when it was harvested to when it was laid. We didn't even have a two per cent loss ratio which was fantastic."

From 14 February through to 19 March, the Course Proper was laid in five sections as they became available from head contractor Akron. They were:

1. From the 600m mark (turn into the home straight) back to the 1400m chute and



**The top end of the Straight Six was the final section of track to be laid**

- 1600m chute. This was the largest section laid – 36,000m<sup>2</sup> – which took four days;
2. Home straight from the corner (600m mark) to the finishing post;
3. Back straight (2000m to 1600m);
4. Turn out of the home straight to the 2000m mark; and
5. Top section of the Straight Six (1200m to 600m).

Turf Renovation Australia was subcontracted by Anco to lay the turf and Tony Sinclair co-ordinated a small army of around 20 which was able to lay between 7000m<sup>2</sup> and 10,000m<sup>2</sup> a day.

As the track was gradually completed, Anco took over the maintenance of each section for a four week period, controlling both irrigation and fertiliser applications. Around 10 kilometres of aluminum piping was set up in three rows right around the track to water in the turf, while Anco, which had undertaken the amendment incorporation prior to laying, also monitored a strict fertility programme.

"We monitored soil moisture to make sure that the new turf didn't dry out which on certain days was a 16-hour operation, particularly on those hot days," says Stephens.

"We had meetings with City West Water before the track was laid to ensure we would be able to water it in. I did some calculations as to the amount we were using after the press reported we were using a megalitre of water a day. In fact, at the maximum – and this was when we laid the first section which was the

biggest stage – we were using at most 0.2 megalitres a day and there were days where that figure was significantly less."

After the four week period was up, Anco would hand over each section to the VRC who, with recommendations from Anco, would determine when to administer the first cut. When ATM visited Flemington in early April, just one section of the track remained to be handed over – the top end of the Straight Six.

And it doesn't end there. With construction of the main lawn and Birdcage areas still ongoing, Anco has a further 30,000m<sup>2</sup> to supply to Flemington. Turfing of the main lawn (20,000m<sup>2</sup>) was due to start on 1 May, while the Birdcage (7000m<sup>2</sup>) and The Elms (3000m<sup>2</sup>) will be finished in August prior to the start of the Spring Carnival.

"The track has established remarkably well," says Stephens. "It has literally gone berserk. It's incredible when you get 2-3cm root growth after just five days. I've never seen anything like it as far as speed of root establishment goes. You couldn't pull it up after five days, particularly the first section which was laid when it was a bit warmer.

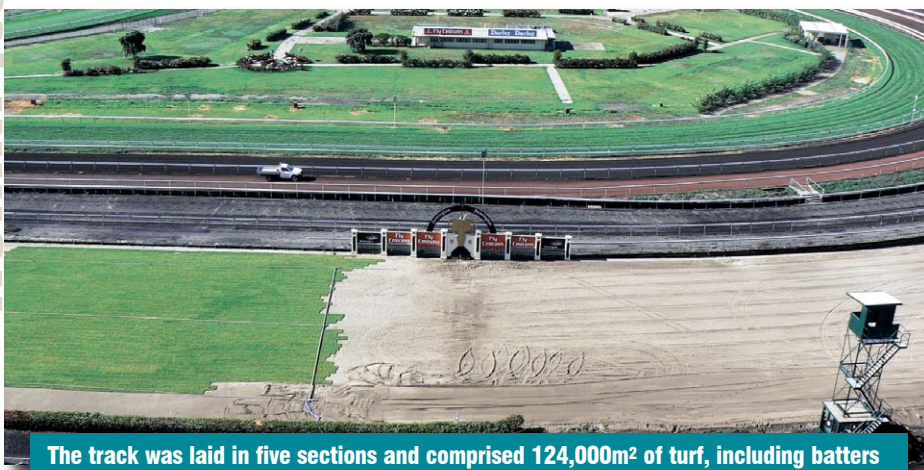
"Seeing how well Caulfield has performed using the same turf over the past year or so, I have no doubt that Flemington will perform just as well. Flemington probably has a slightly different microclimate than Caulfield. Because it is in a river valley it can get pretty foggy and cold in the middle of winter compared to Caulfield. You might get a frost or heavy dew at Caulfield but at Flemington I imagine you would get a lot worse.

As such I would expect the kikuyu to go off a bit more at Flemington but the ryegrass and bluegrass will be okay and with management they'll get it right in the spring. The kikuyu provides such a magnificent base and those rhizomes will always be there and will bounce back beautifully once it starts to heat up. 🌱



**Establishment of the kikuyu-based track has been impressive**





The track was laid in five sections and comprised 124,000m<sup>2</sup> of turf, including batters

CONTINUED FROM PAGE 9

don't think our maintenance practices will radically change with the new track, but we will have to be more vigilant when it comes to using foreign materials. Because the actual growing medium has been manufactured we will make sure we have more of that material manufactured for any ongoing maintenance and repair work. Before racing starts we will also develop a separate 1000m<sup>2</sup> turf nursery that will be made from the same growing medium and turf. By doing that we hope to be able to maintain stability and uniformity across the whole track."

## OFF AND RACING

The new-look Flemington will get its first true test come 8 September when it hosts the inaugural Makybe Diva Stakes (formerly the Craiglee Stakes) which acts as a lead-in to the 2007 Spring Carnival. Before that, however, the track will undergo a series of trials in August to get feedback from jockeys and trainers.

"From a track perspective, first of all it's going to be a real winner with the end users – the horses, jockeys and trainers. If they approve of it then we can't ask for much more. As far as management of the track is concerned

it's going to be much easier because we can now treat it as one whole track and not one which had different parts that needed different management strategies. And hopefully it will race accordingly – nice and even.

"As far as the punters are concerned, hopefully they'll notice that difference too. In the past punters have always looked at the Straight Six on a race day and made up their minds as to whether the inside running or outside running was going to be better. I think now with the new profile it shouldn't really matter where a horse is drawn. If it's good enough it should be able to win because the going should be very even.

"We probably went overboard with the amount of scrutiny and supervision that went with every part of this job. When the first drain was laid we were right there watching like hawks and we were there when the final roll was laid. To the credit of all the contractors they accepted that and they knew we were only doing it because of our desire to make sure that this project was a success. If supervision means anything in the final result then this track should turn out to be pretty good." 🏇

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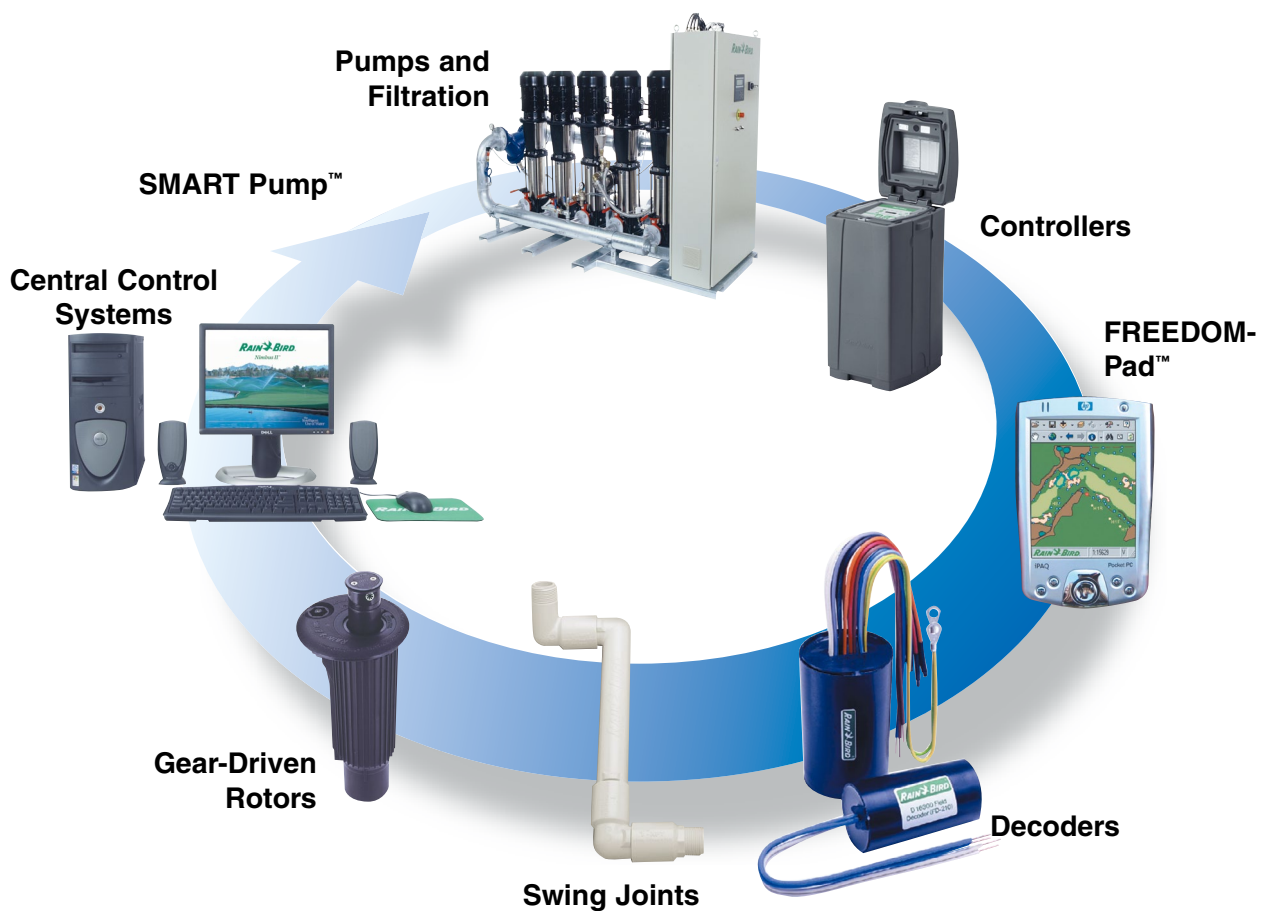






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BY BRETT ROBINSON

Boasting square greens and maintained by a healthy contingent of merino sheep, Ratho Golf Links in Bothwell, Tasmania can lay claim to being the oldest golf course in Australia



# Reviving Ratho

Of the 62 nine-hole golf courses dotted around the island state of Tasmania, there is one which holds a unique place in Australia's golfing history. Ratho Golf Links can lay claim to being the oldest course in Australia and the oldest outside the game's spiritual homeland of Scotland. ATM visits the remote township of Bothwell in Tasmania, which is home to Ratho, and discovers that restoration plans are afoot to ensure it continues to play a vital part in Australia's proud golfing heritage.

## Restoring Australia's

On the surface there doesn't seem much to the small township of Bothwell in Tasmania's central highlands. Located 30 minutes off the Midland Highway on the A5, it boasts your standard friendly local, an assortment of heritage-listed buildings dating back to the early 1800s and a bakery which does a mean steak and onion pie.

It's the sort of place that if you blink a couple of times while driving through you could easily miss it. However, start to take a closer look and it soon becomes apparent that this sleepy rural settlement of only 400 holds a special place in the development of the game of golf in Australia.

A few kilometres the other side of Bothwell lies Ratho, a farming property settled in 1822 by the Reid family who emigrated from Scotland. Along with their farming prowess, the Reids also brought to Van Diemen's Land, as it was then called, a passion for the game of golf. They duly set about establishing a 12-hole golf course on their vast property, not just for their enjoyment but for all the other predominantly Scottish settlers around the district as well.

Remarkably almost two centuries on and despite a change of ownership, Ratho remains

a living, breathing and functioning example of how the game first came to being in Australia. Although the configuration of the holes has changed over time (six of the current nine holes still boast their original routing) Ratho proudly stands as Australia's oldest operational golf course and the oldest course outside the game's spiritual Scottish homeland.

### STEPPING BACK IN TIME

Ratho is a true time capsule and to play it is to experience what the game was like during the 1800s, before the mechanisation of course maintenance, the introduction of year-round watering and the era of Big Bertha and SasQuatch drivers.

It's most apparent uniqueness is the sheep, which graze and keep the playing areas short, with fences to keep them from the square greens. At first glance, it appears to be little more than a backwards blend of farming and recreation outside a small country town. But so the game of golf began.

The significance of Ratho Golf Links becomes apparent when studying early golf, which evolved on the east coast of Scotland on the sandy links land of Musselburgh, Leith,





in the ground and strung wire around to keep the sheep off.

As well as Ratho's above-ground originality, it still distinctively plays like early golf. The lack of an automatic watering system preserves the varying challenges through the seasons – hard and fast in summer through autumn, frosty and firm in the winter, before softening up with the lush green of spring. Limited tree planting through the years has also ensured that the ever-present wind from different directions demands varying lines of attack and shotmaking.

Four generations of the Reid family enjoyed Ratho up until 1936 when the property was acquired by the Ramsay family. Despite purchasing the property more for its fine trout fishing – the Clyde River borders the property to the south – the Ramsay's have continued the tradition of being course custodians and a further four generations have grown up with a special piece of Australia's golfing heritage right on their doorstep.

## REVIVING RATHO

For one member of that current generation, Ratho holds a very special place in the heart. That man is Greg Ramsay, a self-certified golf nut who was one of the principal driving forces behind the much-talked about Barnbougles Dunes.

It was Ramsay's drive and determination that saw Barnbougles Dunes, now ranked inside the world's top-50 courses, come to fruition and with Ratho being a major part of his life he is eager to see the course given a new lease on life and remain an integral piece of Australia's rich golfing heritage for years to come.

In an ambitious move, Ramsay is about to embark on a major project which will see the restoration of Ratho Golf Links. Set to start later this year, works will involve the meticulous resurrection of six 'lost' holes, while in the second part of the project three brand new holes will be constructed to make up a full complement of 18.

Like Prestwick, western Scotland's very first golf course and original home of The Open Championship, Ratho once comprised 12 holes. Starting from the farm homestead, ►

# oldest golf course

Elie, Aberdeen, and Dornoch. It was from those towns that the very first settlers in Bothwell were drawn, and as well as the Reids three other families around the valley laid out golf courses on their farms.

Ratho's pedigree comes from the era of feathery ball and long-nosed woods, sharing many traits with equally antique arenas. Square greens are still evident at St Andrews, where the vast scale and wild undulations hide the fact that their shape was originally set by the 'keeper of the green', who placed four pegs

Currently comprising nine holes, plans are underway to restore Ratho's six 'lost' holes as well as construct three brand new holes to make up a full 18-hole layout



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## The Ratho greens are a mixture of native bentgrasses and fescues

◀ six holes ran north of the shearing shed in a paddock, and six holes south of it towards the township of Bothwell, including three that ran alongside the Clyde River.

Those six southern holes are no longer in play. Three were abandoned when play was resumed after World War II while the other three holes were ploughed under in the early 1980s when a new access road and bridge into Bothwell were redirected alongside the old first hole. The ensuing government compensation was used to build three new holes (the current fourth, fifth, and sixth holes) to make up the present-day nine which stretches over 2281m.

"In my opinion they abandoned the better holes," says Ramsay. "We have original scorecards and maps of where those 'lost' holes were located, so the aim is to reproduce them and then build an additional three holes.

"The contours of one of the old greens remain because it is in a separate paddock. Unfortunately the others have been flattened, but with the use of old photographs we are going to try and locate the natural grade of the land and find some contours that will fit in with that to create some strategic greens.

"Restored thoughtfully, Ratho has the potential to become something of a national pilgrimage for Australian golfers to learn about the origins of the game. The primary responsibility is to restore Ratho to its true origins. The challenge also is to translate that history into an enriching experience that is relevant to the modern golfer."

The new greens will be constructed to a California-type specification and along with some of the tees will be hydroseeded with a

mix of bentgrass and fescue, a similar practice that was undertaken with great success during the construction of Barnbougle Dunes.

All up the restoration will cost in the vicinity of \$400,000 once irrigation, turf, consultants, shaping, agronomy and design are all factored in. The six restored holes are expected to be in play by autumn 2008 with the three 'new' holes to be open in spring 2008.

To assist with the project, the Federal Government has pitched in \$100,000 through the ausIndustry Regional Tourism Development Program, while Ramsay has also been fortunate to secure the services of renowned South Australian golf course architect Neil Crafter.

"Neil has a great interest in the evolution of golf architecture and how the game has evolved over time, so I feel very lucky to have someone with his expertise involved with the design," says Ramsay.

"I'm very interested in the academic side of golf course design and I look at it not only as a landscaping project but also as a bit of a science and an art. It's a combination of all those things that really interests me and Neil is a real student of that as well."

While resurrecting the lost six holes is one aspect of the project, another goal is the reinstatement of several quirky features that Ratho was known for. Aside from the sheep and fenced greens, hazards such as hedges, vegetable gardens, rock walls, irrigation canals and sheep yards used to come into play.

"The first tee shot used to be out over the sheep yards and I think that will be a real talking point once the restoration is complete," says Ramsay. "That's what the early courses were like; they were fitted in wherever there was room. Ballybunion in Ireland for instance plays over an old cemetery.

"We're obviously going to keep the square greens, but the fences around them will be demountable so we can take them down for tournaments which gives the course a totally different look and feel.

"There also used to be a big draught horse stud on the property and the idea we have for corporate days is that when people arrive and play the first few holes there will be two draught horses pulling our old five-gang mower down the seventh and eighth fairways. We've got a lot of images of the fairways being mown this way and we actually have some of the boots that the horses used to wear so they wouldn't damage the turf too much.

"That's the sort of thing we are trying to reinstate, to show people how primitive early golf was and how far golf course maintenance has come since those early days."

Ratho has been in the Ramsay family for four generations and is home to the local Bothwell Golf Club which has just 40 members who volunteer to maintain tees and greens





## MODERN-DAY ISSUES

Despite its special place in the development of the game of golf in Australia, Ratho still remains an operational golf course and just like any other modern-day country nine-holer in Tasmania it has its issues to face.

Like most small courses, Ratho relies on volunteers from the attached Bothwell Golf Club to maintain the course throughout the year. While the Ramsay family look after the fairways, using an old Scott Bonnar five-gang mower to clip the fairways when the sheep can't keep up during the growing season, volunteer members from the club look after the greens and tees.

The golf club has just 40 members from around the district who take it in turn to mow the greens once a week and generally once a month during winter. The greens used be mown using a modern greens unit mower but after that broke down six months ago an old Scott Bonnar SuperCut was renovated and brought back to life and still manages to provide a decent cut.

The greens, which haven't been altered since around WWII, are irrigated by using



An old Scott Bonnar SuperCut is still used to cut the greens at Ratho. It was brought back to life after the course's modern greens unit broke down six months ago

common garden hoses with mist sprayers, while renovations usually comprise of coring and scarifying depending on whether volunteers are available.

"The club would like to scarify and core every year but in the last few years it seems to be getting harder in the country towns to attract volunteers to do it, so it has probably

gone back to once every two years now," says Ramsay.

"A lot of the country courses down here are struggling now because people don't seem to have the time to volunteer and Ratho really wouldn't survive were it not for the sheep and a few extra tourist golfers."

Ratho gets about 1000 rounds of golf a year and also hosts a couple of unique tournaments including the Highland Lassies women's tournament, the Tasmanian Highland Championships (formerly a state selection event back in the 1950s) and the prestigious Bothwell Masters where members vie for a tweed tartan jacket instead of a green jacket. The course is managed a little more intensively leading up to those events but again relies on the hands of volunteers.

This year the course will also play host to the National Hickory Championships ►

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Ratho is a true time capsule and to play it is to experience what the game was like during the 1800s



Ratho's Scott Bonnar five-gang mower



◀ which Ramsay has organised as part of the first Australian Golf Heritage Festival. The festival will take in a number of venues around Tasmania – including Barnbougle Dunes, Royal Hobart, Tasmania and Tasman golf clubs – with Bothwell providing a focal point for the event which runs from 24-29 May.

Like the rest of Tasmania in recent times, Ratho has felt the full effects of the drought and when ATM visited in November 2006 the region had experienced less than 50 per cent of its annual rainfall.

"It hasn't been the harshest but it's been the most prolonged drought we've had," states Ramsay. "Despite that we haven't been tempted to put in wall-to-wall irrigation and we don't intend on doing so because generally the course is good every four years out of five without it which is part of the seasonal nature of a changing golf course."

"In winter the turf is at its best. The finer

turfgrasses come through and the broadleaves and the weeds are really only a problem during spring and summer. From autumn through to August the course is in great nick."

"The hardest thing is spring and summer where you get the lush growth and even if you put a thousand sheep out there they can't keep it down to a playable level because it grows so quick. But then you get the drought we've had for the past 18 months and it really knocks things back."

One of the unique aspects of the course is the turf, in particular the native grasses which dominate the sward. The greens are a mix of highland bentgrass, red and chewings fescue that have been oversown with fine fescue, while the fairways are a mix of kangaroo and wallaby grasses which are kept to a manageable length by the merino sheep which

happily graze (the property runs around 7000 sheep, with a couple hundred normally on the golf course at any given time).

"As part of the restoration we are trying to encourage the re-establishment of the native grasses," says Ramsay. "If you read accounts of the Bothwell Golf Club back in 1950s and 1960s it was well regarded as having fairway turf as good as anywhere else in the state and that goes back to the fact that it was wall-to-wall native grass."

"In the 1980s my father put in some flood irrigation channels thinking that it would help the golf course. Unfortunately it eroded away the topsoil and with it a lot of the native grasses and brought in a whole heap of agricultural grasses. Since we stopped flood irrigating the native grasses are re-populating the ground very well."

"The wallaby and kangaroo grasses throw up a big seedhead, but the sheep keep that down and it actually makes for a very nice surface to play off. Under mowing pressure it really thickens up too."

"They are very low maintenance grasses as well and I'd like to think that with environmental pressures and cost of maintenance issues currently affecting the golf industry that by using native grasses we might be able to show that by going backwards a little we could be more sustainable."

For more information about the Australian Golf Heritage Festival (24-29 May) contact Greg Ramsay at [greg@rathogolf.com](mailto:greg@rathogolf.com) or visit [www.rathogolf.com](http://www.rathogolf.com) for a full rundown of events. 🌱



A 'keeper of the green' watches over his turf





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BY BRETT ROBINSON

Over the past 20 years Barry Cox has risen to become one of the most respected members of the Queensland golf course superintendent fraternity and last year he was awarded life membership of the GCSAQ. Looking forward to his retirement this April, Cox's plans were thrown into chaos when he was forced to undergo heart bypass surgery in January. Now well on the road to a full recovery, ATM caught up with Cox to look back over what has been highly rewarding career in turf management.



# Cox back on



Barry Cox has handed over the reins of Ocean Shores Country Club to his assistant Richard Phillips (left) who has been with the club for the past 10 years

It's not quite how Barry Cox imagined he would bow out of the turf industry. After 20 years as superintendent at Ocean Shores Country Club in northern New South Wales, Cox was looking forward to the good life come April 2007, playing a lot more golf and planning trips to far flung corners of this vast continent with wife Joyce.

His heart, however, had other ideas. A routine trip to the doctor last December ended up in an ambulance ride to hospital and the alarming news that he had suffered a mild heart attack in the preceding days. Tests confirmed the worst and in January he underwent a triple heart bypass.

For someone who has worked on the land all his life and generally considered himself to be in pretty good nick, the whole situation came as quite a shock. Fortunately, however, the surgery was a success and after a period of





**After 20 years as superintendent at Ocean Shores Country Club in northern New South Wales, GCSAQ life member Barry Cox is looking forward to a long and healthy retirement despite undergoing recent heart bypass surgery**

convalescing Cox is again looking forward to doing what he does best – being active.

There's not much that the GCSAQ life member hasn't done so far in his 64 years. He's the sort of man that likes to be involved and you only have to look at his impressive service record with local associations and organisations to see that – 16 years as secretary-treasurer of the local Tweed tomato growers association, 13 years on the board at Coolangatta and Tweed Heads Golf Club, 10 years (including a term as vice-president) on the committee of the GCSAQ. Cox even holds a second life membership for his services to the Kingscliff Hockey Club.

Hailing from Murwillumbah, Cox was one of five children born into a farming family and it's that close affinity with the land that has remained with Cox all his life. Whether it was working alongside his old man on their sugar cane farm, growing tomatoes for 20 years at Cudgen, through to his stint at Ocean Shores, the deep red soil of the northern NSW coast has coursed through his veins.

On a muggy morning in mid-March, ATM magazine caught up with a convalescing Cox on the balcony of his home, which just so happens to overlook the 9th green at Ocean Shores Country Club, to talk turf, tomatoes and, of course, his ticker.

**You've just undergone a triple heart bypass which has forced you into a bit retirement a bit earlier than expected. How have you come through the operation and how has it changed your perspective on life?**

"It was a real scare, I'll admit that. I thought I was pretty healthy, ate sensibly, and I certainly wasn't anticipating those sorts of problems. I'd had a bit of a heartburn sensation in my chest for a few weeks and thought it was my hiatus hernia playing up. It didn't go away so I thought I had better go and get it checked.

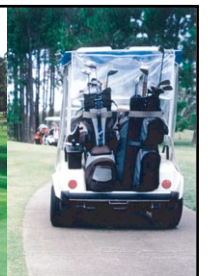
Within half an hour of visiting the doctors they had me in an ambulance going up the road to John Flynn Private Hospital. My blood pressure was up and they were telling me that during the last couple days I probably had suffered a mild heart attack.

As you can imagine it came as a hell of a shock. I had absolutely no idea. I had to ring Joyce to tell her to pick up the car from the doctors as I was in an ambulance going up the Pacific Highway! You can imagine her response!

So I went from rolling rocks around the golf course on Monday to being in the hospital on Wednesday. Upon testing they found a number of arterial blockages in locations where stents were unable to be used which meant I needed heart bypass surgery. They told me to go ►

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At last year's GCSAQ AGM Cox was awarded life membership of the association

◀ home and take it easy for a month, gave me a few pills and said see you back in January.

They sliced me open on 17 January. I don't even want to know what they did, but I can imagine it was pretty serious considering the amount of tubes that were hanging out of me when I woke up. I was in intensive care for two days and in hospital for a total of eight. But I came through the operation good and everything has tested out fine since.

It all came as quite a shock. I had told Ocean Shores that I was going to finish up after 20 years in April, then this came along and sort of forced my hand. It's not quite the way I wanted to go out but I didn't have much of a say in the matter. In saying that though I have been pretty lucky over the years. I haven't

had a sickie in my 20 years at the club and the only time I was ever off work was when I spent five days in hospital after getting hit in the face with a hockey ball back in my 20s.

If there's one thing to come out of all of this it just goes to show how fragile we are and how rarely we take a good look at our health. All the years that I have been involved with the turf industry and attended workshops and national conferences, as superintendents we're so obsessed with the health of our turf and machinery that we forget about the health of the most important thing – ourselves.

Going to the rehabilitation course after surgery has been a real eyeopener and there was a lot of information that I wish I had known about years ago. I'm sure there are

superintendents out there who, like myself, often dismiss symptoms like heartburn and indigestion as something they've either eaten or had to drink, but as I've learned such symptoms can be the early signs of a heart problem.

Maybe for the Melbourne conference in 2008 we should get a health professional to address delegates. We discuss the health of the grass enough. I'm sure we can take a small amount of time to discuss us for a change. Fortunately, though, I was the only greenkeeper at the rehab course so I guess that's a good sign."

**You were a tomato farmer for many years before you switched to being a golf course superintendent. Why did you make the move into turf?**

"Farming has always been a big part of my life right back to the early days. My dad had a dairy and cane farm in Murwillumbah and I left school to help him out. Dad dropped the dairy side of his operations and concentrated on cane and after a few years working with him he kicked me out and I went to work for the neighbours on their cane plantation.

A few years later we brought a cane farm at Cudgen and I decided to go into vegetable crops, in particular tomatoes, but also peas and beans, which were going through a bit of a boom at the time. We ended up having that farm for 20 years before we sold up and brought a farm further south towards Lismore.

It was during those years at Cudgen that I guess I got my first experience as a greenkeeper. At weekends I played cricket and the ground we played on was just a kikuyu/carpetgrass paddock on top of a hill. No one ever maintained it so I used to go up there every now and then with my tractor and slasher and cut it.

I did that for a number of years until I joined the local hockey club which happened to use the same ground during winter. Again, no one maintained it so during winter I would go up there and cut it for play. Eventually the club (Kingscliff Hockey Club) moved to a purpose-built ground at Kingscliff and I helped them out establishing the turf.

After I finished playing hockey I decided to join the Coolangatta and Tweed Heads Golf Club. After four years I found myself as vice-captain of the club, then captain and then chairman of the greens committee. During that



time I was fortunate enough to work with Doug Robinson and Jeff Gambin who became very close friends. I must have driven them mad with phone calls because I soon learnt that as a greens director you had to know everything about the course. I ended up being in various positions at Coolangatta Tweed for 13 years during which time the course expanded to 36 holes and a new clubhouse was built.

At the same time as we sold the farm in Cudgen we brought a house at Ocean Shores which just so happened to look right out over the golf course. I soon found myself on the board there too.

It was around that time that the tomato industry started to gradually wane in the region

and production started to shift north to centres like Bundaberg. I dabbled in growing avocados for a bit before deciding to get out of farming altogether. Having three daughters and no sons there wasn't much point in continuing and we were losing money on vegetable crops.

It was around that time that the job came up at Ocean Shores Country Club for a head greenkeeper. As I was on the board I was able to get the support of a few members and despite not having any formal turf qualifications and never having been a greenkeeper before, they gave me the opportunity. The fact that I have survived for 20 years shows I must have done something right (laughs)."

#### How did you find the switch from farming to turf management and how did your previous involvement with golf club committees help in your transition?

"I must admit I probably did fumble my way around for the first year or so. Not having a turf background I found it a little difficult to get information but once I started going to the annual conferences and being involved I learned very quickly. It was the same with farming; if you didn't know something you asked someone and I found I had to do that when I started out in turf. The likes of Doug Robinson and Jeff Gambin were always happy to help me out and that's one of the great things that I have come to respect about this ►



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industry – the willingness of most people to share their knowledge, regardless of how big their course was.

One of the most difficult aspects early on was the lack of equipment and the small staff and budgets. Fortunately coming from a farming background I was used to working long hours and at weekend. Our equipment was old and I remember when I first started the guys used to trim bunker edges with spades and would drive a car and trailer into the base of the bunkers!

One of the things I quickly learnt at Ocean Shores was how to ferret out money from the different areas of the club, whether it was the clubhouse, bowling operations, or the lady members.

As it turned out over the years the lady members have been tremendous. They managed to generate a lot of money from managing the halfway house and rather than let them accumulate money and have it spent on something pointless, like painting the clubhouse, we would always have various course projects which we got them involved with. It's amazing what they contributed over the years and through their support we have managed to put a cart path around the entire course, renovate most of the bunkers as well as improve fairway drainage.

Fortunately the course was well constructed which meant there wasn't the need for any major redevelopments. Instead we have always had small projects on the go which we have carried out in-house and over the years we have continually made improvements to the course.

My background on golf club committees and boards has probably served me well over the years. Understanding first and foremost how they worked and not being worried about how they operated and the politics that sometimes goes on.

Also, I always tried to present things to the board well ahead of when I wanted to do them; plant the seed, let it grow a bit in their minds rather than rushing into a greens committee or board meeting with plans for tomorrow. If you can think far enough ahead and follow it through and get them involved with the idea, that's when you have success.

I've seen a number of good superintendents get beaten by committees over the years which is a shame, but I guess because I have been on the other side I have never had a problem



The annual Australian Turfgrass Conference and state association field days have provide Cox with invaluable information over the years

dealing with committees. But consistency is a big issue at member clubs and getting the support you need to undertake long-term projects can be difficult. It comes down to communication and also a bit of luck."

#### How much has the industry changed from when you first started out?

"There are certainly a lot more challenges for superintendents these days. The most frustrating thing for me was the increase in paperwork to cover your backside from an environmental perspective and the countless legislative requirements with OH&S, especially the need to have a pocketful of cards and tickets to do certain things like operate a chainsaw or a frontend loader. I started doing all that stuff like risk assessments and to be honest it's still sitting in a pile in the corner of the office. It's small clubs like this where it really becomes an issue as it takes away valuable time on the course.

I often wonder who really benefits? It doesn't make the grass grown any better, it doesn't get the job done any quicker, its

helping those who become directors of a club to shuffle even more paper. Whereas once you had practical people on golf club boards you are now finding there are a lot coming in who are from management positions that only ever deal with paperwork and make decisions from reports. They never get their hands dirty.

Obviously there are legal arguments as to why you have to have all this paperwork and I guess clubs have to make sure their backsides are covered because if something goes wrong they could be liable. You only have to look at what happened at Warringah.

But for smaller courses it just sometimes isn't practical. I kept a diary for the first six years I was here, but never looked at them. As far as I'm concerned it comes down to commonsense. You have a brain, eyes, ears and a mouth. Use them. That's all you need."

#### Over the years you have played major roles in golf club boards and committees as well as various organisations including the GCSAQ. Do you have a habit of falling into these positions?

They all just sort of happened I guess (laughs). I think at one stage there I was a part of seven different boards, committees or organisations – the local tomato growers association, the National Party, Kingscliff Hockey Club, Lions, golf committees – so I guess it was only a matter of time before I became involved with the Queensland superintendents.

They put me in charge of field days and I ended up doing that for 10 years, along with being vice-president. The exchange of knowledge and the fellowship has always been a major part of the field days and we have always been lucky to have very good support for the sponsors over the years.

I helped organise the annual bus trips to the country which have been one of the real highlights for me over the years. We did a similar thing for the tomato growers so it was only a logical step to start something up for superintendents and it has been a rewarding experience to visit some of these small courses and see how they operate under some tough conditions.

We've tried to do a few different things over the years to help boost numbers and I only hope I was able to contribute to that. Gaining life membership of the association was certainly a surprise last year. Not bad for a New South Welshman! 🍷



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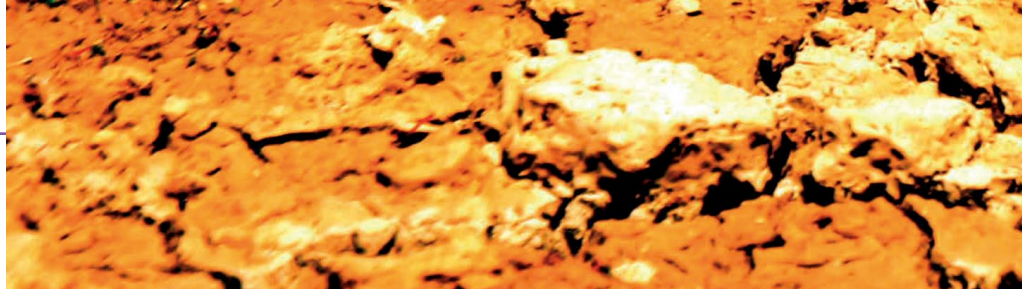
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## THE PULSE

The drought currently afflicting many parts of Australia has caused widespread havoc upon the turf industry and its practitioners. While superintendents and turf managers have had to call upon every ounce of expertise to manage their surfaces with reduced inputs, companies which supply the industry have also been hit hard. In this instalment, The Pulse asks how four different companies have been affected by the drought and what, if any, positives they have been able to draw from this trying period.

### DEAN HOLDEN Evergreen Turf



The drought and subsequent water restrictions have placed a heavy burden on Evergreen Turf. Since Stage 3 restrictions were imposed in Melbourne on 1 January, instant turf sales have dropped by 85 per cent and our line planting service has seen turnover reduce by approximately \$300,000. While we have not had to resort to retrenchments, staff numbers have certainly reduced through natural attrition. And then there are the things you can't measure. Increased stress levels for our staff due to the uncertainty of job security. Erratic trading makes it very difficult to plan. Ultimately the local community is affected, with a reduction in trading from the business and its employees.

While there have been huge negative ramifications for the business, Evergreen Turf has been able to draw some positives out of the drought. We have successfully converted much of our production facility from cool-season grasses to more drought-tolerant species. In conjunction with a well known turf specialist, we have developed two locally bred couchgrasses, and extended our line planting service to a new range of clients.

Despite the difficult times, Evergreen Turf has continued to promote its expansive range of products and services to new markets and prospective clients. As a result, we have successfully formed new relationships beyond our normal market region, as well as completing a number of substantial export projects.

While Evergreen Turf has traditionally been a turf supplier, we also market StaLok Reinforcement Systems as an alternative to turf. StaLok products are far less water-reliant than turf, and as much of the east coast is gripped by drought, they are certainly creating considerable interest.

We cannot ignore the fact that there will be less water for everyone in the future, and if we as individuals elect not to accept this change, the turf industry as a whole will suffer forever. We as an industry must educate ourselves and develop improved water conservation habits, and most importantly, any knowledge gained must be passed on to the end consumer. 🌱

### CAMERON HENLEY PGG Wrightson Turf

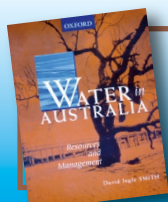


PGG Wrightson has responded quickly to the widespread drought and its lasting impact upon the Australian turfgrass community.

Without doubt, the 2006 drought has seen a big change in the grasses used on sporting grounds in Victoria. Historically, south-eastern Australia has been a spring market but grounds managers are now switching to warm-season grasses such as couch and kikuyu, over-sowing with ryegrasses in autumn to withstand football traffic. It's more typical of the Queensland, New South Wales and Western Australian markets. This is something we expected. We're also finding that some councils are either buying a lot of ryegrasses in response to pressure from sporting clubs for winter cover, or conserving water and not doing anything at all.

While demand for turf is generally down about 30 per cent, an outcome of the drought experienced by the whole industry, the market is making many inquiries about drought-tolerant products. Customers are looking for drought-tolerant grasses with the ability to bounce back quickly following rain.

PGG Wrightson Turf has anticipated this market shift and, uniquely among turf companies, we are breeding Australian cultivars selected for drought tolerance and persistence at our research centre in Ballarat. The ryegrass cultivars have been screened for drought tolerance and disease resistance at



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the Redlands research facility in Queensland. These cultivars have been developed under tough, dry Australian conditions. Their Mediterranean germplasm means good winter activity, providing good coverage and an excellent fit with the general shift on sporting fields. It's perfect for over-sowing in autumn into warm-season grasses. These new grasses are also high in endophytes, providing a further boost to establishment and growth as well as providing good insect resistance. 🌱

### BRUCE STEPHENS Anco Turf and Seed



The current water restrictions being enforced on turf users is having a devastating affect on turf farms around the country. In particular, Victorian turf producers have suffered as water authorities have not given exemptions for the watering of new turf since the introduction of Stage 2 restrictions.

Consequently turf sales have reduced by 90 per cent since the introduction of Stage 3 restrictions with the subsequent loss of 70 staff from the industry. Many of those that have been retrenched in an effort to keep companies afloat are long-serving members of the industry and may find employment opportunities hard to come by in the rural areas that they live.

The turf industry feels particularly discriminated against when other industries using similar or more water for their manufacture or usage are not subject to legislative restrictions and can trade without change or threat.

Anco Seed and Turf, which has four farms located around Melbourne, has had to lay off 11 staff in an effort to survive. The long-term future looks bleak if catchment levels do not increase or the government comes up with alternatives for supply.

Sales of cool-season grasses have virtually

dried up and demand for warm-season grasses has increased as a percentage of total sales. Anco has been converting some of its tall fescue paddocks to Conquest and Santa ana couch as well as male sterile kikuyu in the hope that a change in the weather brings an increase in demand.

The drought has had an effect on the public's perception of lawns and their supposed need for copious amounts of water to sustain a green appearance. The recovery of kikuyu and couch lawns around Melbourne and Victoria following the three rainfall incidences of February and March, educated the public on just how little water these types of grasses require.

Based on sales histories of Victorian turf farmers, it has been calculated that a 14-day exemption for newly planted warm-season lawns will require as little as 0.003 per cent of Melbourne's daily water use. Given that other industries use more and are not legislated against we feel that the economic, environmental and social impact of the current restrictions is unjustified.

Our production facilities at Anco are irrigated with Class C recycled water from the Black Rock treatment plant at Thirteenth Beach and Class A water from the Carrum treatment plant. No potable water is used in production of the turf.

Anco has also been proactive in educating the public about grey water use through newspaper articles and our website. This has helped sales marginally for those who are prepared to install such units and continue to irrigate with grey water.

In summary, in an effort to save water, the drought and water restrictions have forced the public to use warm-season grasses in and around Melbourne and become accustomed to their associated dormancy issues while still maintaining a complete home landscape.

Further education of governments and the public is needed to show the significant water

saving ability of warm-season grasses and the resulting environmental benefit and impact. Perhaps then our industry will not be the one and only legislated against. 🌱

### DAVID WESTALL Scotts Australia



The recent drought over the past three to four years has affected many parts of the turf industry and obviously this has impacted on suppliers and distributors that service the industry right across the board.

Water restrictions have primarily impacted the fertiliser broad acre market with many local governments and golf courses reviewing water usage. The importance to maintain adequate irrigation to fairways and local sporting fields to a level that was expected prior to the onset of drought and water restrictions has had to be met either by clubs and other sites paying for extra water usage or a reduction in the expected turf quality level.

Through this time Scotts has had to adapt to this market. An increase in the wetting agent segment has been significant, as has the slow-release fertiliser market, as no immediate irrigation is required following application.

It is foreseeable that things won't change quickly, if at all. The introduction of newer drought-tolerant grass types may be the answer but will require a heavy upfront cost and a change in mindset for the user and a change in maintenance practices and aesthetic value.

Recycled water, sewage mining and treated effluent will have to be a part of life in the future. The nutrient levels in some recycled waters will obviously affect fertiliser manufacture (N.P.K and trace element ratios) as the nutrient loading will change depending on the water quality. Scotts is currently in development of new fertiliser technologies that will require less irrigation and increase stress tolerance such as drought and disease resistance. 🌱



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Sands are often perceived as having too low a cation exchange capacity (CEC). Ways of increasing CEC is by the incorporation of organic matter, zeolite type products or by raising pH

In this instalment of Tech Talk, Andrew Peart looks at cation exchange capacity and how this important chemical process can have a dramatic impact on the ability of soils and sand to retain vital nutrients.



# Considering cation exchange capacity

Cation exchange capacity (CEC) refers to a soil's ability to hold on to cations by electrical attraction. Cations are positively charged ions that have arisen from the atoms of that element 'losing' electrons to complete a more stable outer shell.

They can arise from several sources. As minerals dissolve, ions are released into the soil solution. This is the primary source of ions over a long period of time. However, of more importance to the plant's sources of ions are:

- Ions carried in irrigation water;
- Ions applied as fertiliser, lime or other materials applied to the soil;
- Ions from organic matter decomposition.

The five most abundant cations in soils are calcium, magnesium, potassium, sodium and aluminium. The others involved are hydrogen and ammonium. The charge indicates the number of electrons an atom has lost (e.g.:  $\text{Ca}^{2+}$  has 'lost' two electrons).

## COLLOIDS

Colloidal sized particles are referred to as being negatively charged and because of their small size but very high surface area, they are highly chemically active. Colloids comprise both inorganic (clays) and organic forms (humus).

## CLAY MINERALS - INORGANIC

The main building blocks of clay minerals are atoms of silicon, aluminium, oxygen and hydrogen, but may also contain iron and magnesium. Clays are made up of a series of layers and within each layer are either two or three sheets of atoms.

The kaolinite group of clay minerals contain one sheet of silica and one alumina. These minerals - kaolinite and halloysite - are referred to as 1:1 clays. In other groups of minerals an alumina sheet is sandwiched between two silica sheets. These minerals are known as smectite (formerly montmorillonite), vermiculite, illite and chlorites.

Clay minerals are different from one another partly because the layers are stacked together differently. In some they are only loosely held together (kaolinite), or in others held together by potassium (illites) or magnesium and calcium (smectite).

The total negative charge on 2:1 clays is much greater than on 1:1 clays. Some examples of 2:1 clays include smectites, vermiculite, and beidellite while an example of a 1:1 clay is kaolinite. The increased negative charge of 2:1 clays is due to a process called isomorphic substitution and is independent of pH.

An increase in the total negative charge of a soil can also increase as pH increases. This is generally due to the dissociation of the hydroxyl edges on the clay minerals which can be represented as:

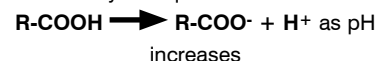


## HUMUS - ORGANIC

Humus is a fraction of soil organic matter that has undergone extensive decomposition and chemical alteration, including the synthesis of complex organic compounds. Humus comprises about 60-80 per cent of the soil organic matter. Humus has very high surface area and high CEC due to several functional

groups, especially carboxyl ( $-\text{COOH}$ ) and hydroxyl ( $-\text{OH}$ ).

The cation exchange capacity of organic colloids is largely dependant on pH as seen with the disassociation of the hydroxyl edges of the silicon hydroxide in clays. For humus it is the dissociation of not only the hydroxyl group but also the carboxyl group on the organic matter fraction of the soil. This again can be represented by an equation:



The table below outlines the CEC of a soil as influenced by soil texture and colloid type (Carrow, Waddington and Rieke, 2001)

Soil Texture	CEC(cmolkg <sup>-1</sup> )
Sand (1-2% org. matter by weight)	1-3
Sand (2-4% org. matter by weight)*	3-5
Sandy loam	3-10
Loam	7-16
Silt Loam	10-25
Clay, clay loams (2:1 clay)	20-50
Clay, clay loam (kaolinite clay)	4-6

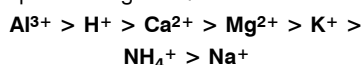
\* A USGA golf green typically contains 1-3 per cent organic matter by weight at time of construction.

## CATION ATTRACTION

Cation attraction is based on three criteria; (a) dependent on the concentration of that cation in solution, (b) the charge on the cation, and (c) their hydration state. The greater the concentration of a cation in the soil solution the more likely it is to become adsorbed.



Hydrogen, due to its small size, is adsorbed much more strongly than would occur if adsorption was strictly based on charge alone. In general, independent of concentrations of a given element or compound, the order of adsorption strength is as follows:



## CEC MEASUREMENT

CEC is measured in milliequivalents per 100 grams (meq/100g) or centimoles per kilogram (cmol/kg). Both these terms are equal to each other.

One milliequivalent of CEC is equal to  $6.02 \times 10^{20}$  negatively charged sites that can attract cations. Thus a soil with a CEC of 1 meq/100g of dry soil would contain  $6.02 \times 10^{20}$  negatively charged sites per 100 gram of dry soil.

The CEC of a soil is calculated by adding up the CEC of each cation, which is given as part of a standard soil nutrient test. An example is given below.

Cation	CEC (meq/100g)	Per cent
Ca	3.02	75
Mg	0.23	6
K	0.09	2
Na	0.70	17
<b>CEC</b>	<b>4.04</b>	<b>100%</b>

The actual CEC maybe slightly higher due to the presence of hydrogen, aluminium or other cations but in general calcium, magnesium, potassium and sodium will comprise the vast majority.

Sometimes soil tests will express quantities of cations expressed in mg/kg or parts per million (ppm). These can be converted to meq/100g by dividing by their equivalent weight then by 10.

The equivalent weight of a cation is its atomic weight divided by its charge. For

example, calcium has an atomic weight of 40 and a charge of 2 ( $2^+$ ). Therefore, its equivalent weight is 20.

The atomic weight and charge for other cations are;

- Magnesium (at. weight 24; charge 2)
- Potassium (at. weight 39; charge 1)
- Sodium (at. weight 23; charge 1)
- Hydrogen (at. weight 1; charge 1)
- Aluminium (at. weight 27; charge 3)

Therefore, if a soil test revealed the following amounts of cations expressed in parts per million, the meq/100g could be calculated to give the following result

Cation	mg/kg	meq/100g
Calcium	1100	5.5
Magnesium	160	1.33
Potassium	219	0.56
Sodium	40	0.17

## IMPORTANCE OF CEC ON FERTILISATION

Cations held on the exchange sites are interchangeable with cations in the soil solution. For example, a  $\text{Mg}^{2+}$  cation on the colloid surface can be replaced by two  $\text{H}^+$  cations so that the  $\text{Mg}^{2+}$  cation goes into the soil solution.

Cations in the soil solution are readily available for plant use while cations on the CEC sites are considered moderately available. Cations are also present in various compounds that range from relatively soluble to insoluble. Cations that form structural components of the soil are very slowly available for plant uptake.

Of the total readily available cations (soil solution plus CEC sites) 1 to 10 per cent is in the soil solution and 90-98 per cent on the exchange sites. Thus the major source of nutrients for plant uptake is held on the exchange sites.

## FACTORS INFLUENCING CATION RELEASE

Factors that influence the release of cations from exchange sites are:

**1. The strength of cation absorption on the cation exchange sites affects the release.** The strength for which they are held is proportional to their charge and hydrated ion radius. As stated before the following is the order of absorption:  $\text{Al}^{3+} > \text{H}^+ > \text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+ > \text{NH}_4^+ > \text{Na}^+$

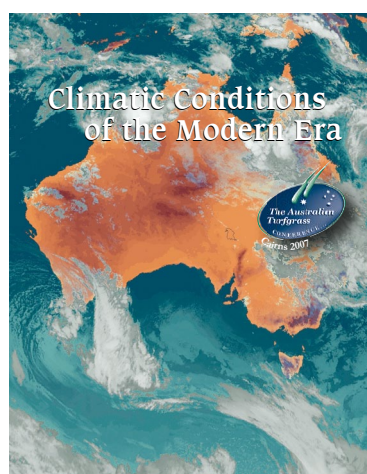
The hydrogen ion is an exception due to its very small size and higher charge density. Therefore, it has an absorption strength between aluminium and calcium. For cations of the same charge those with smaller hydrated radii are held tightest.

**2. The percent saturation of the cation exchange sites by a nutrient.** A cation is more readily exchanged if it is present at a higher percent saturation than at a low saturation level. For example, if  $\text{K}^+$  saturation is low the addition of a potassium fertiliser will increase the percent potassium saturation and thereby potassium availability. Also adding a high concentration of a cation will result in it replacing other cations even if they have a higher charge.

**3. Clay type.** Clays with higher charge density (CEC) may retain a nutrient much stronger than one with a lower charge density, even though both have the same percent saturation level. For example,  $\text{Ca}^{2+}$  on kaolinite at 50 per cent saturation may be as plant available as  $\text{Ca}^{2+}$  at 70 per cent saturation on a smectite which has a higher charge density.

## IMPORTANCE OF CEC ON LEACHING

Nutrients that are retained on exchange sites have a degree of protection from leaching beyond the root system. The cations that are available for quick uptake by the plant in the



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soil solution are also very vulnerable to being lost by leaching after heavy rainfall events. Therefore, the amount of fertiliser applied in any one application should be governed by the cation exchange capacity of that soil.

## IMPORTANCE OF CEC ON BUFFER CAPACITY

This is the measure of a soil's ability to resist chemical change. Without buffer capacity soil pH and factors influenced by pH (nutrient form, nutrient availability, chemical composition of compounds, solubility of compounds and bacteria populations) would rapidly change with the influence of rainfall, irrigation and small quantities of chemicals.

The major buffering capacity of most soils is the cation exchange sites. Hydrogen ( $H^+$ ) ion activity in the soil solution is what determines soil pH. When  $H^+$  ions are added to the soil, most of the  $H^+$  is absorbed onto the exchange sites due to their level of attraction and therefore buffering the soil against drastic soil pH change.

## MANAGEMENT OF LOW CEC SOILS

Sands are often perceived as having too low

a cation exchange capacity. One of the ways of increasing CEC is by the incorporation of organic matter, zeolite type products or by raising pH to near 7. Carrow et. al. 2001, states that generally practices to enhance CEC are considered only when turfgrass soils have a CEC of less than  $4 \text{ cmol kg}^{-1}$ .

### 1. Adjust soil pH

Most CEC sites on sandy soil types are provided by organic colloids as few inorganic colloids (clays) are present. On organic colloids the majority of sites are pH dependent with a CEC increase of 10-30 per cent per pH unit.

### 2. Adding Organic Matter

As an example, a sandy soil with a CEC of 3 meq/100g may contain 1.5 per cent by weight of humus (well decomposed organic matter) which has a CEC of around 150 meq/100g. Therefore, it receives 2.25 meq from the humus and 0.75 meq from inorganic sources.

If humus was increased to 3 per cent then 4.5 meq would be obtained by humus plus the 0.75 from inorganic source (5.25 meq/100g total). There would be a 75 per cent increase in the CEC from just 1.5 per cent addition of humus. Humus additions can therefore be beneficial on newly established areas but

they can have some negative aspects to the performance of the playing surface if applied in too large a quantity.

It must be remembered though that 1-3 per cent by weight normally accounts for 8-15 per cent by volume and not to confuse the two.

### 3. Zeolite

There are many different types of zeolites, with clinoptilolite reportedly having the greatest potential for increasing CEC (Carrow et. al. 2001). It has a CEC (100 to 230  $\text{cmol kg}^{-1}$ ) that arises from isomorphous substitution of  $Al^{3+}$  for  $Si^{4+}$ .

The selectivity for cation attraction is different from colloidal particles and is:

(greatest)  $K^+, NH_4^+ > H^+ > Na^+ > Ca^{2+} > Mg^{2+}$  (least)

Due to zeolite's low affinity for magnesium, regular magnesium applications will need to be maintained to ensure magnesium is not deficient, particularly if high rates of potassium are being applied.

## REFERENCES

**Carrow, R.N. et al, 2001.** *Turfgrass Soil Fertility and Chemical Problems: Assessment and Management.* Wiley, Hoboken, New Jersey. 🌱

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The NTEP overseeding study took place at 12 courses in the US under actual golf course playing conditions



# Evaluating grasses for overseeding couch fairways

Overseeding couchgrass fairways is a common practice used by golf courses to produce that beautiful green product that so many golfers desire. Overseeding can add to a course's bottom line by increasing rounds, but overseeding also provides better tolerance of cart traffic, divoting, and weed invasion than dormant couchgrass.

However, obtaining that perfect green 'carpet' is not as easy as it may seem. With overseeding, golf course superintendents must manage a cool-season grass that loves milder temperatures seeded into a warm-season grass base that loves hot days. Optimally, managing one grass without hurting the other, while keeping a high quality surface, is the challenge of many golf course superintendents.

There are many factors that determine the success or failure of overseeding. One of the key factors is the type and/or cultivar of grass chosen. Golf course owners, managers and superintendents seek grasses that establish quickly, exhibit exceptional playability, are aesthetically pleasing, and require less inputs.

To address these issues, two research projects were developed and jointly sponsored by the GCSAA, the USGA, and the National Turfgrass Evaluation Program (NTEP) to evaluate cultivars, blends, and mixtures for their use in overseeding couchgrass fairways.

The first project evaluated 42 grasses, blends and mixtures at 10 golf courses from September 1999 through July 2001 (1). A second project was conducted from September 2004 through July 2006, evaluating 31 cultivars, mixes, and blends at 12 golf courses. This article summarises the results of project two.

From 2004 to 2006, the USGA together with the GCSAA and NTEP, conducted the second national trial of grasses used to overseed couchgrass fairways. The study compared 31 cultivars, blends, and mixtures for overseeding when tested under actual golf course playing conditions.

## METHODS

Twelve golf courses were chosen to host the 'On-site Overseeding Trials'. They were Heritage Highlands CC, Arizona; Indian Wells GC, California; University of Florida GC, Florida; Osceola GC, Florida; Eagles Landing GC, Georgia; Mississippi State University; New Mexico State University, New Mexico; Pinehurst CC #3, North Carolina; John E Kirkpatrick Five Hole Demonstration GC, Oklahoma; Blackmoor GC, South Carolina; The Traditions Club, Texas; and Roanoke CC, Virginia.

Because overseeding grasses provide a temporary playing surface for autumn, winter, and spring and are reseeded each year, cultivars were seeded in two consecutive years (autumn 2004 and autumn 2005). Since speed, ease and uniformity of transition from the couchgrass to the overseeded grass in autumn and back to the couchgrass in spring is one of the biggest concerns when overseeding, entries were seeded in exactly the same location on each course for each of the two years. This allowed researchers to identify entries that persisted over time.

NTEP solicited entries for the trial from sponsoring companies. Trials were conducted

with named cultivars and commercially available blends or mixtures. In addition, experimental entries that were to be commercialised in the immediate future (i.e. before the end of the testing cycle) were also permitted.

Various species used in overseeding, such as perennial ryegrass and *Poa trivialis* (rough bluegrass) were allowed. This led to the submission of many perennial ryegrass entries, as single cultivars or blends, but also single cultivars of *Poa trivialis*.

In addition, two cultivars of intermediate ryegrass and one mixture of perennial ryegrass and intermediate ryegrass were included in the trial. Intermediate ryegrasses are developed by crossing annual and perennial ryegrass, then selecting plants that have the best traits of both species. Plant breeders have worked to develop intermediate ryegrasses that provide a smooth spring transition back to couchgrass but with finer leaf texture and darker green colour.

Trials were established on active play sites where golfers hit fairway golf shots and/or drove golf carts. Plots were carefully seeded either by hand or using a drop spreader. Since seeding rates vary widely from one



region to another, each location was consulted concerning typical overseeding rates in their area.

Consequently, three seeding rates for the ryegrasses (300, 450 and 600 lbs. per acre) (136, 204 and 272kg per 0.4ha), two rates for *Poa trivialis* (100 and 200 lbs. per acre) (45 and 90kg per 0.4ha) and two rates for mixtures (250 and 400 lbs. per acre) (113 and 181kg per 0.4ha) were developed. The most appropriate rate for each grass type was then assigned to the locations (Table 1).

The experimental plot size was large, 5' x 20' (1.5m x 6m), replicated three times. A large plot size allowed for a greater distribution of traffic and divoting. Host clubs provided the daily maintenance of the fairway site. An advisory committee consisting of representatives from GCSAA, USGA, NTEP, universities, and the turfgrass seed industry recommended establishment and maintenance procedures.

The researcher at the cooperating university was responsible for data collection. The following data was collected from each trial site:

- Percent establishment rate (4-6 weeks after seeding);
- Turfgrass quality (monthly during winter; minimum of three times during autumn transition period; five to seven times during spring transition period);
- Plot colour, genetic colour (twice – late autumn/early winter and spring);
- Rate or speed of transition from couchgrass to overseeded grass in autumn (minimum of three ratings);
- Rate or speed of transition from overseeded grass to couchgrass in spring (5-7 ratings);
- Density and leaf texture - once each in spring; and



From left, Jose Maak, Dr. Bernd Leinauer and Kevin Morris check species composition of overseeded plots on the New Mexico State University Golf Course

- Environmental stress, traffic and divoting damage, disease and insect damage and other data deemed appropriate and feasible by the research co-operator.

## RESULTS AND DISCUSSION AUTUMN 2004-SPRING 2005

The trial contained 31 entries, consisting of perennial ryegrass cultivars, perennial ryegrass blends, intermediate ryegrass and *Poa trivialis*. These entries were seeded in September or October at the 12 golf course sites. Establishment was good; no problems were seen with any entries. Data collected from autumn 2004 through spring 2005 was compiled, statistically analysed, and reported. This data can be found on the NTEP web site ([www.ntep.org/onsite/ost.htm](http://www.ntep.org/onsite/ost.htm)). Following are general observations concerning the trials evaluated in autumn 2004 – spring 2005:

- The *Poa trivialis* varieties were slower to establish and develop into a dense stand than the perennial ryegrasses. They also

exhibited lighter green colour than the perennial ryegrasses. The four *Poa trivialis* entries had the lowest turfgrass quality ratings at most locations.

- The perennial ryegrasses overall provided the best turfgrass quality. However, at most locations, there was little statistical difference among the entries. This result is similar to what we have seen in previous overseeding trials.
- The two intermediate ryegrass entries differed somewhat in their appearance and overall performance. The entry 'IS-IR3' performed better than 'RAD-OS3' at some locations, statistically equal to many perennial ryegrass entries. However, this performance was not consistent as the intermediate ryegrasses finished in the bottom for turfgrass quality at several other locations.
- The transition in spring from overseeding grass to actively growing couchgrass did not reveal large differences in entry

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Roanoke CC in Virginia was the only trial site in the second year where intermediate ryegrass was the top performer

performances. In some cases, the *Poa trivialis* entries were poorer in this respect, resulting in reduced overseeding cover when the couchgrass is not growing enough to provide adequate ground cover. At other locations, there was virtually no difference among any entries.

### FALL 2005-SPRING 2006

The same 31 entries seeded in autumn 2004 were seeded again in September or October 2005 at the 12 golf course sites. The same physical location on the golf course was used with the following two exceptions: An error occurred after seeding at the Myrtle Beach site resulting in contamination of the entire trial. Therefore, no data was collected from this site during the 2005-2006. Another area

at the Eagles Landing Club (Stockbridge, GA) was used in 2005 due to drainage problems at the previous site. A progress report containing 2005-2006 data and management information on this project can be found on the NTEP web site at <http://www.ntep.org/onsite/ost.htm>.

The following are some observations concerning the second year of this trial:

- At most locations, the perennial ryegrass entries or blends of perennial ryegrasses were the best performers. Often, there was little or no statistical difference among the perennial ryegrasses for overall quality, as well as autumn and spring transition.
- The fewest differences in overall turfgrass quality among entries were seen at Las Cruces, NM. The greatest spread in overall turfgrass quality was recorded at the

Pinehurst, NC location. The intermediate ryegrasses were the top performers at the Roanoke, VA site only. Also, the *Poa trivialis* entries as a group performed better at this location than at any other location. This is the northernmost location for this trial and is the most likely explanation for the strong showing of those two species.

At many locations, *Poa trivialis* entries established significantly slower than the perennial ryegrasses, taking until 30-40 days after seeding to establish the same percentage ground cover as the perennial ryegrasses. This difference was most evident at Gainesville, FL as the *Poa trivialis* entries provided only 70-75 per cent ground cover by the end of winter, compared to 85-90 per cent cover for the perennial ryegrasses.

- Again, the intermediate ryegrass entries generally had lower quality ratings than the perennial ryegrasses. The intermediate ryegrasses do not have the density and dark green colour of the best perennial ryegrasses. However, the two entries did perform statistically equal for turfgrass quality at several locations. The higher ranking entry, 'IS-IR3', finished in the top statistical grouping for turfgrass quality at eight of the 11 locations.

### SUMMARY

After two years of this study and the previous study, we can draw a number of conclusions about overseeding. Many perennial ryegrasses perform well in overseeding and often there is no statistical difference among the entries, a trend we have seen in other trials.

*Poa trivialis*' usefulness in overseeding of fairways is questionable. It is slower to establish than perennial ryegrass, and it seems that when *Poa trivialis* is weakened due to heat or disease, it disappears quickly. This leaves insufficient green couchgrass for acceptable quality. *Poa trivialis* also is lighter green in colour than most perennial ryegrasses.

However, if the goal is little or no physical disturbance of the couchgrass prior to overseeding, the small seed size of *Poa trivialis* allows it to sift through the couchgrass canopy to make soil contact. The result is a better stand of *Poa trivialis* compared to perennial ryegrass.

Weather patterns and management greatly

TABLE 1. THE CHOICE OF SEEDING RATES WERE LEFT UP TO PARTICIPATING GOLF COURSE SUPERINTENDENTS AND VARIED BY LOCATION AND GRASS TYPE.

Grass Types and Seeding Rates (lbs per acre)*			
Location	Perennial rye – single cultivars or blends	<i>Poa trivialis</i> single cultivars	Mixtures of perennial rye or intermediate rye and <i>Poa trivialis</i>
Mississippi State Uni	300 (136)	100 (45)	250 (113)
Eagles Landing GC	450 (204)	100 (45)	400 (181)
Roanoke CC	450 (204)	200 (90)	250 (113)
University of Florida GC	450 (204)	100 (45)	400 (181)
Heritage Highlands CC	600 (272)	100 (45)	400 (181)
Blackmoor GC	300 (136)	200 (90)	250 (113)
Indian Wells GC	600 (272)	200 (90)	400 (181)
John E Kirkpatrick GC	450 (204)	100 (45)	250 (113)
New Mexico State Uni	450 (204)	200 (90)	400 (181)
The Traditions Club	450 (204)	200 (90)	400 (181)
Osceola GC	450 (204)	200 (90)	400 (181)
Pinehurst CC #3	450 (204)	100 (45)	250 (113)
* kg/0.4 ha conversion in brackets			



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The mountains provide a spectacular backdrop for the fairway overseeding trials at Indian Wells Country Club in California.

influence overseeding success. Variable weather patterns turn a successful overseeding formula from the past into a disaster in the present. For instance, weather can affect establishment rate or transition speed and timing. This is where good management by the superintendent is crucial. The ability and authority to adjust management schemes as needed is critical for success.

The intermediate ryegrasses may be useful in fairway overseeding. Cultivars are available now with quality closer to perennial ryegrass, but with earlier transition tendencies.

Transitioning from a turf stand dominated by overseeding grass to a stand of growing couchgrass in spring is the most difficult and arduous task a superintendent faces during the overseeding period. This transition is rarely smooth and is affected greatly by the weather.

In the cooler, more northern sites, grasses that are strong going into winter may not have as much couchgrass returning in spring. When the overseeding grass dies, there may not be sufficient couchgrass to provide adequate cover and quality.

A balance exists between quality and cover of each species in autumn and spring. The higher the quality of the overseeding early in autumn, the more overseeding present in spring, along with reduced couchgrass cover. The result is a more difficult spring transition. The lower the quality of overseeding in autumn, the less overseeding present in spring, often leading to a better spring transition.

Use of a weaker cultivar or species may make for a better spring transition. However, if heat and humidity come early, these weaker grasses may transition out sooner than expected.

The practice of overseeding couchgrass fairways continues throughout the southern U.S., however, not without associated risks. An overseeding grass that is too strong through the winter may lead to slower couchgrass recovery in spring.

Also, weather patterns can be quite variable from one season to the next, therefore, overseeding results can be drastically different over time. Management practices including pre-plant preparation, maintenance practices during the winter season, and management of spring transition can significantly affect the quality of overseeding.

Golf course superintendents walk a tightrope in balancing the golfers' demand for quality and the grasses' response to management and climatic conditions.

Golf courses that prescribe to fairway overseeding need to have clear goals and objectives for the practice, as well as realistic expectations of the outcome. Success in overseeding needs to be carefully defined, considering expectations of the clientele tempered with a healthy dose of reality.

## ACKNOWLEDGEMENTS

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Full results of this research project can be found at [www.ntep.org/onsite/ost.htm](http://www.ntep.org/onsite/ost.htm). Kevin Morris can be contacted via email [kmorris@ntep.org](mailto:kmorris@ntep.org).

## LITERATURE

**Morris, K. 2004.** Grasses for overseeding couchgrass fairways. *USGA Turfgrass and Environmental Research Online* 3(1):1-8. (TGIF Record 94383) 🌱



Trial plots at Osceola Golf Course



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BY G. E. HARMAN, E. B. NELSON AND  
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Research undertaken in the US shows that repeated applications of fungicides do not have major impacts on soil microbial communities



# Fungicide application effects on non-target microbial populations of putting greens

The management of turfgrasses, especially on golf courses, represents perhaps the highest level of plant management practiced on any agricultural or horticultural commodity known today. Proper turfgrass management involves a number of rather complicated mechanical, physical, chemical, and biological manipulations that result in the desired product of a blemish-free carpet of green grass.

Highly maintained turfgrass sites characteristically use high inputs in the form of fuel, fertilisers, pesticides, and water for irrigation. Pesticide use, in particular, is substantial with the use of fungicides a major tactic for controlling diseases on high quality turfgrasses. This is particularly true on golf greens.

Short cutting heights, the ever-increasing amount of traffic on putting greens, and low nutrient inputs have placed unprecedented stresses on turfgrass plants, making them highly susceptible to damage from many different diseases, some of which were previously considered relatively unimportant. Golf course turfgrasses receive very high fungicide and use is increasing (1).

The majority of those applications are to putting greens and tees, making the amount of fungicide applied per unit area quite high. Since many high-maintenance turfgrass sites are found in close proximity to surface waters

Researchers at Cornell University tested the hypothesis that repeated applications of fungicides to putting greens would have major impacts on microbial populations of both foliar and soil-borne microbes.

Surprisingly, this was not that case.

and within critical groundwater recharge areas, and primarily in and around urban areas, questions have been raised as to the impact of such a land use on water quality, wildlife, and human health, particularly as it relates to pesticide exposures.

Further, there have been a number of non-target effects of fungicides in turfgrass management systems. These include selection of fungicide resistant biotypes of pathogens, promotion of non-target diseases, enhanced thatch build-up, decreased root or stem biomass and rapid disease resurgence following fungicide applications (5).

Given the high levels of fungicides applied to turfgrass, we considered it likely that high levels of applications of frequently applied fungicides would alter or perturb soil and foliar microbial communities. This perturbation would be expected to have significant consequences including the promotion of non-target diseases and rapid disease resurgence because of the destruction of natural antagonists of turf

pathogens. This paper summarises three years of extensive sampling of turf microbial communities in the presence and absence of fungicide applications.

## MATERIALS AND METHODS

In 1996, five eight-foot diameter 'swimming pool' greens constructed in 1995 at the Cornell University Turf Research Farm in Ithaca, NY, were used as the experimental microplots. The pools contained the standard USGA sand/peat profile.

Subplots consisted of an untreated plot and the seven fungicide treatments. Each subplot was three square feet and each treatment was represented on each pool. The fungicides selected represent different classes with different modes of action. For example, Daconil Ultrex (chlorothalonil) is a contact fungicide with a relatively non-specific mode of action against most classes of fungi. Chipco 26019 Flo (iprodione) selectively damages energy-producing organelles in select fungi.



Banner Maxx (propiconazole) and Bayleton (triadimefon) are systemic in plants and have a very specific mode of action, inhibiting a specific enzyme necessary for fungal cell integrity (3). In all cases, if alternative rates are registered, we always used the maximum legal rate of the fungicide. The treatments, active ingredients, rates, and application schedules are shown in Table 1.

Two hundred milliliters of the appropriate rate was applied to each plot using a hydraulic CO<sub>2</sub> sprayer. Samples were taken from starting in May before any fungicide application and monthly thereafter through September. Nine to 12 1cm-diameter cores were taken from each subplot at a depth of 3cm and transported to the laboratory for microbial assays.

Microbial plate counts were determined by performing a serial dilution in phosphate-buffered saline (PBS) and plating appropriate dilutions on solid media. Acidified potato dextrose agar plus a microbial colony restrictor (4) was used to enumerate total culturable fungi. This medium eliminates growth of bacteria and permits characterisation of colonies based on colony morphology.

Some of the most common fungi encountered on this medium were *Trichoderma* and *Penicillium spp.* and yeasts. These fungi are very common in soil and on roots and usually either have few effects on plant growth or else have beneficial ones, including biocontrol abilities. Total culturable bacterial population numbers were estimated by plating on tryptic soy agar (10% strength). This is a differential medium favored by bacteria and fungi grow poorly on it.

We also examined specific microbial groups. For Actinomycetes, which are

Treatment	Active Ingredient	Rate*	Application Interval
Untreated	-----	-----	-----
Daconil Ultrex	chlorothalonil	102g/93m <sup>2</sup>	14 days
Chipco 26019 Flo	iprodione	226g/93m <sup>2</sup>	21 days
Subdue Maxx	mefenoxam	28g/93m <sup>2</sup>	21 days
Banner Maxx	propiconazole	113g/93m <sup>2</sup>	21 days
Bayleton 25W	triadimefon	113g/93m <sup>2</sup>	21 days
Prostar 50WP	flutolanil	85g/93m <sup>2</sup>	14 days
Sentinel	cyproconazole	4.7g/93m <sup>2</sup>	21 days

\* This figure has been converted from oz/1000sq.ft

filamentous bacteria, we used 0.02% tripticase soy agar + the antibiotic polymixin B sulfate. This nutrient-poor medium is favorable for Actinobacterias with minimal growth of fungi or other bacteria. *Pseudomonas spp.*, which are common plant-associated bacteria and which frequently have biocontrol ability, were enumerated on a selective medium that we have used earlier (4).

Finally, we enumerated Oomycetes in the genus *Pythium* using a *Pythium*-selective medium. These organisms may be plant pathogens or biocontrol organisms, depending on the particular species and strain that are present.

In addition, BIOLOG GN plates were used to assess functional diversity by means of metabolic profiles. General levels of microbial activity were determined by the rate of hydrolysis of fluorescein diacetate. Finally, phospholipid fatty acid profiles were used to assess taxonomic diversity of microbial communities.

## RESULTS

In 1996, we sampled roots from the plots

every month and evaluated changes in the microbial profiles using the various media. We detected no significant differences and the results were similar to those in 1997, so we will present only the 1997 data. Similarly, we found no significant differences in BIOLOG microbial metabolic profiling, based on principal component analyses. We also found no differences in general microbial activity or following phospholipid activity tests.

In 1997, we sampled both roots and leaves. The total number of fungal propagules detected was greater in soil at the start of the season than later, but there were no significant effects even after the season-long application of fungicides, regardless of the fungicide applied (Fig. 1). On leaves, there were no significant effects of fungicide applications on total numbers of fungi, regardless of time or fungicide application. Most of the fungi detected were in the genus *Trichoderma*. We were able to distinguish between species similar to *T. virens* and those similar to *T. harzianum*, since the latter has a tan pigmentation on the reverse side of the acidified potato dextrose agar plates while those of *T. virens* are white.

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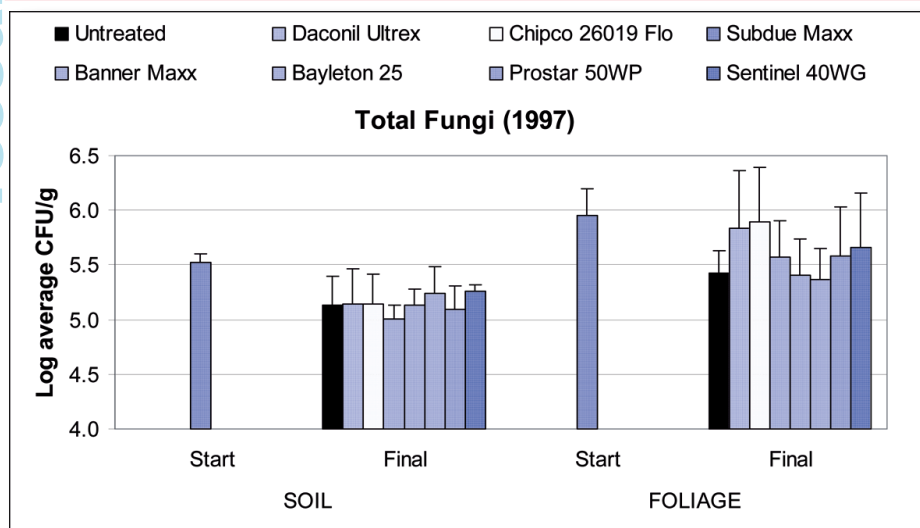
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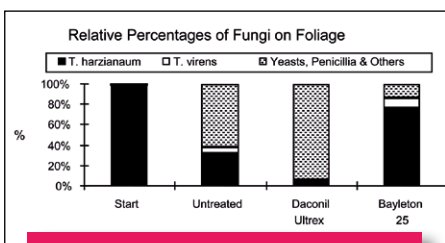
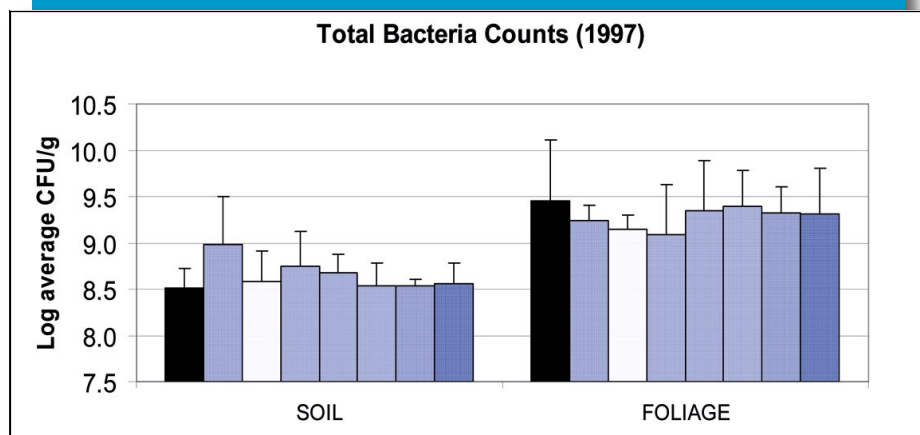
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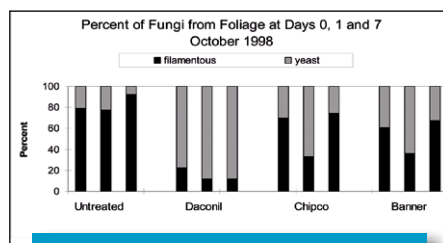
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**Fig. 1.** Enumeration of total fungi (top) at the start of the 1997 season (May) and after a full season of fungicide applications (bottom) (September). Total bacteria are represented only at the end of the season. Populations are represented by the log of the average number of colony forming units (CFUs) per gram of soil or foliage.



**Fig. 2.** Changes in leaf fungal compositions over time (start = May 1997) and at the end of the season as affected by different fungicide applications.



**Fig. 3.** Changes in populations of filamentous fungi versus yeasts on turf foliage just before and shortly after fungicide applications

There was no significant effect of time or treatment on either *Trichoderma* spp. in soil, but on foliage, there were initially higher levels of *T. harzianum* at the start of the season. By the end of the season there were no differences between the two and fungicide applications made no difference. Likewise, the fungicide applications had no effect on total numbers of *Pythium* spp., total bacterial,

*Pseudomonad* or *Actinobacteria* numbers. In contrast, nearly all of the fungi on leaves were similar to *T. harzianum*, but by the end of the season, other fungi had largely displaced *T. harzianum*, and were predominately yeasts, *Penicillia* and others. This was particularly true with plants that had been treated with Daconil Ultrex. On plants treated with Bayleton 25, *T. harzianum* remained the predominate fungus (Fig. 2)

In 1998, we performed a mini-experiment on a soil green at the Cornell University Turf Research Farm. In September and again in October we focused on the timing of sampling after application of fungicides. We sampled the plots before we made the scheduled application (day 0), one day after the application (day 1) and again seven days after the application (day 7).

FDA hydrolysis analyses and fungal enumerations were performed at each sampling time for four different treatments: untreated, Daconil Ultrex, Chipco 26019 Flo and Banner Maxx. Three repetitions of each treatment were sampled. For the final sample set, all treatments were sampled one day after the final fungicide application.

The relative numbers of filamentous fungi versus yeasts changed substantially on turf leaves as evidenced by both the numbers and plate appearances (Fig. 3). However, there was no significant difference in total microbial metabolic activity among fungicide treatments as measured with the FDA test. Most of the fungi isolated from leaves of untreated plants were filamentous fungi, while after the season-long application of Daconil, most of the fungi isolated were yeasts. With Chipco or Banner, the change in populations of filamentous fungi versus yeasts was more transitory, dropping immediately after application and then increasing within a week.

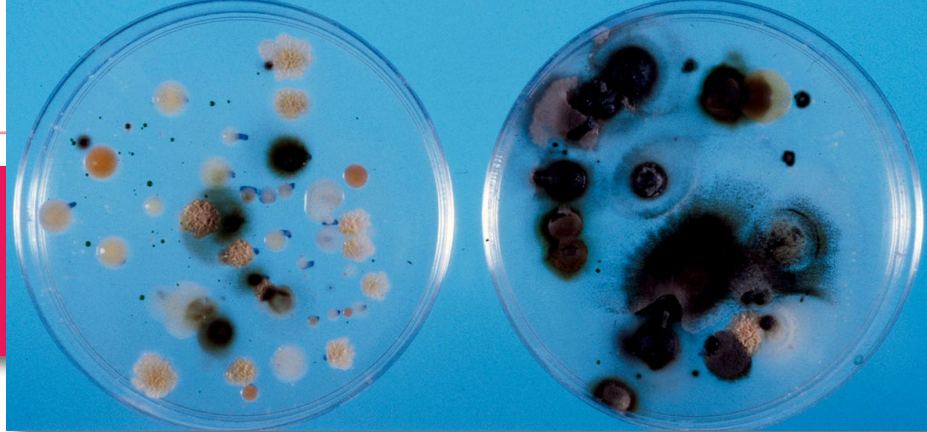
## DISCUSSION

Our hypothesis at the start of the work was that repeated applications of fungicides would dramatically change the microbial composition around roots and on leaf blades. This clearly was not the case with any of the fungicides tested. On roots we could see no changes whatsoever with plating tests, BIOLOG tests for metabolic profiles, fatty acid microbial profiles or tests for total microbial metabolic activity. Thus, while different results might be obtained with other assays, such as ribosomal DNA assays, it does not appear that repeated applications of fungicides have major impacts on soil microbial communities.

This may be because (a) the fungicides are mostly water insoluble and therefore do not penetrate deeply into the soil or (b) the soil microbial community is highly competitive and resilient and able to rebound very quickly after fungicidal applications. The fact that *Trichoderma* spp. are so prevalent in the fungal



**Appearance of cultures from dilution plates from Daconil Ultrex-treated leaves (left) and untreated plants (right). The dark colonies are filamentous fungi and the white to tan mucoid cultures are yeasts**



community may also be significant since many members of this genus are highly resistant to a variety of fungicides (2) and their populations could be selectively over the years that greens are established.

We were particularly surprised at the leaf plating data, which at first glance, gave little indication of change based on numbers counted on the various media. However, it now is clear that, while total numbers of fungi on leaf blades do not change, the application of fungicides changes the composition in favour of yeasts relative to filamentous fungi. This effect may be transitory, as in the case of Chipco, or longer lasting as was the case with Daconil.

The fungal community on leaf blades appears highly dynamic and changing in response to fungicide applications. It

is important to note that the natural dollar spot epiphytotic that occurs each year was controlled by fungicides as expected (data not shown).

### ACKNOWLEDGEMENTS

G. E. Harman and K. L. Ondik are from the Departments of Horticultural Sciences and Plant Pathology, Cornell University, Geneva, NY. E. B. Nelson is from the Department of Plant Pathology, Cornell University, Ithaca, NY. This research is published with the permission of USGATERO (Vol. 5, No.7)

### REFERENCES

1. **Anonmyous. 2005.** Fungicides hit growth

spurt in turf and ornamental markets. *Grounds Maintenance*.

2. **Harman, G. E., C. R. Howell, A. Viterbo, I. Chet, and M. Lorito. 2004.** *Trichoderma species---opportunistic, avirulent plant symbionts.* *Nature Rev. Microbiol.* 2:43-56.
3. **Köller, W. 1992.** *Target Sites of Fungicide Action.* CRC Press, Boca Raton, FL.
4. **Norton, J. M., and G. E. Harman. 1985.** *Responses of soil microbes to volatile exudates from germinating pea seeds.* *Can. J. Bot.* 65:1040-1045.
5. **Smiley, R. W., P. H. Dernoeden, and B. B. Clarke. 1992.** *Compendium of Turfgrass Diseases, 2nd Edition.* APS Press, St. Paul, MN. 🌱



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## ALL IN A DAY'S WORK AT ASQUITH AND AVONDALE

**A**squith Golf Club superintendent Stuart Hall and his Avondale Golf Club counterpart David Warwick won't forget the summer of 2006/07 in a hurry, in particular one weekend in late January. Both superintendents inadvertently found themselves on the frontline in the fight against raging bushfires which broke out around the region during a 40-degree plus weekend.

At Asquith, in the northern Sydney suburb of Mt Coolah, Hall was hand-watering greens in 41 degree heat when bushfires took hold in the nearby Ku-ring-gai Chase National Park. With three dams on site, the course became a vital player in the Rural Fire Service's efforts to contain the fire, with five water bomber helicopters, include two 'Elvis' sky cranes, taking water out of two dams to douse the raging fires just a few kilometres away.

With the helicopters in operation, the club was forced to close the course on late Sunday afternoon, 21 January, and wasn't able to reopen it until Tuesday. Fire crews worked through Sunday night and into Monday to put the fires out, with the helicopters working around the clock for up to 10 hours at a time.

"It was quite an eventful couple of days, but it was a great experience," recalls Hall, who has been superintendent for nearly four years. "Watching the Elvis helicopters in action is quite a sight, particularly when they take off with nine tonnes of water in them."

One of Hall's more difficult assignments was getting golfers off the course and also dealing with the raft of curious locals who were jumping the course's perimeter fence to take photos of the massive sky cranes in action.

Hall estimates that combined the helicopters took between two and three megalitres of water from the dams, which at the time were around 50 per cent of capacity. Water used in the fire fighting efforts was later replaced by recycled water tankered in from the nearby Sydney Water treatment plant in Hornsby.

To add to the drama of the weekend, one of the smaller helicopters managed to suck up one dam's aerator anchor rope into its intake hose and without realising took off, ripping out about 35m of electrical cable before the rope finally snapped. Hall says had the helicopter been going the other way it would have pulled out wiring from the pumping station which could have meant a much greater repair bill.

While the fire front at Asquith was a few kilometres away from the course itself, Avondale Golf Club superintendent David Warwick and his staff had to deal with a more



**Above: A water bomber helicopter inadvertently pulls up the aerator in one of Asquith Golf Club's dams during fire fighting efforts in January**



**Left: Fires rip through bushland next to the third fairway at Avondale Golf Club**



**Bottom: Elvis to the rescue at Avondale**

immediate threat that same weekend following the outbreak of a fire in bushland on the left hand side of the course's third fairway.

The fire, allegedly started by local kids, ripped through bushland forcing greenkeeping staff to down tools and take up hoses, which were run off quick coupling valves, in an attempt to put out spot fires that were sparked from burning embers. Irrigation system sprinklers were also used to combat the blaze.

Two sky crane helicopters were brought in to bombard the fire from the air, each dropping three loads each of around 9000 litres, while

Rural Fire Service ground crews came onto the course to mop up any hot spots.

"The pinpoint accuracy of the sky cranes was amazing and they had the fires out within 20 minutes," says Warwick. "It was a bit of excitement for the boys and something that doesn't happen every day. We had a couple of Scottish greenkeepers working for us at the time and they couldn't quite believe their eyes."

The fires scorched nearly 400m<sup>2</sup> of short couch rough on the third hole which has slowly started to regenerate.



## ASQUITH RECYCLED WATER APPLICATION DOUSED BY DEUS

**D**espite playing a major role in fire fighting efforts to save Ku-ring-gai Chase National Park in January, Asquith Golf Club's attempt to get unlimited recycled water pumped into its dams has been knocked back.

Asquith's application was rejected by the NSW Department of Energy, Utilities and Sustainability (DEUS) on the eve of the NSW Government elections in late March, a decision which has disappointed not only club manager Cameron Harvey but a number of other community end users who would have benefited from the plan.

Asquith Golf Club went into a joint application with Hornsby Council and Sydney Water, which was going to construct a pipeline from the Sydney Water treatment plant at Berowra Heights past six major

sportsgrounds then ending at the golf course which has three dams that hold a combined 80 megalitres.

Not only would the pipeline provide a valuable water source for those facilities which have struggled with the drought, but having an unlimited supply of recycled water pumped into the golf club's dams would provide huge assistance in fire fighting efforts should bushfires rip through the adjacent national park, as was demonstrated in January (see story opposite). At present Sydney Water pumps excess recycled water from the plant straight into a creek.

"It's disappointing," says Harvey of the decision. "Hornsby Council has six major ovals which are in desperate need of watering as they are regularly used by schools and the public.

"A park in North Ryde had to be closed due to the state of the oval. The community benefits of our joint application are obvious. Other local councils have received grants for less than this.

"We are still waiting on the explanation letter as to why the application failed. It's funny how during the fires the Federal Government seemingly had an endless pit of money to tanker recycled water into our dams to replenish the water taken by the choppers, but an amount can't be given to service the entire community. Instead, megalitres of good, recycled water is going straight into the creek.

"We'll try again with the application in a couple of months, but at the moment we have more than enough water in our dams, so it isn't a problem."

## NEW-LOOK LAKE KARRINYUP FRONT NINE SCORES A HOLE IN ONE

**S**taff at Lake Karrinyup will be looking forward to catching their breath over the winter months following a hectic spring/summer period which has seen the completion of the first phase of a \$2.6million greens reconstruction project.

In one of the largest projects undertaken at the exclusive Perth-based golf club, superintendent Trevor Strachan and staff completely overhauled the front nine greens, bunkers and surrounds starting in late September 2006.

The new-look nine was reopened to members in March and the second phase of the project, which will see the remaining back nine completed, will start this September.

New tees were also constructed as well as modified bunkering on the course and hole lengthening especially on the third where the tees have been pushed back to bring the lake more into play.

A feasibility study is also being undertaken on the large main lake to see if lining the natural lake is possible and pumping water via the Gwelup lake system is viable.

All the new greens have been sown with Penn G6, the end result of nearly four years of trials. Lake Karrinyup was part of the AGCSA's HAL-funded bentgrass variety trial project, with Strachan assessing 13 different varieties of bents for colour, density, putting quality, root depth, thatch layer, drought tolerance, establishment and seedling vigour.



**The newly constructed 5th green at Lake Karrinyup in Perth**

The Penn G6 was imported directly from the US being 99% germination certified and applied with a drop spreader followed by a light hydro mulch application to protect the surface from wind, irrigation and rain erosion. After five days germination was observed and total grow-in took around 12 weeks. A perched water table construction was used for the greens.



**Lake Karrinyup's new 8th green**

## PRESIDENTS CUP RETURNS TO MELBOURNE

The Australian golfing community was abuzz in early April following the announcement by PGA Tour Commissioner Tim Finchem that the ninth staging of The Presidents Cup will be contested from 14-20 November, 2011, in Melbourne.

Melbourne becomes the first city outside of the United States to host the prestigious match-play competition more than once, after Royal Melbourne Golf Club hosted the event in 1998. While the host course for the 2011 Presidents Cup has yet to be announced, it is expected that the event will return to the Black Rock course which is home to superintendent Jim Porter.

"We are thrilled to be bringing The Presidents Cup back to Melbourne in 2011," Finchem said in his announcement. "Every player, fan and tour staff member who either attended or watched the 1998 Presidents Cup still vividly remembers the incredibly warm welcome extended to the participants and the first-class atmosphere Melbourne created."

"Melbourne's government and citizens staged a superb competition then, and we are confident they will only exceed expectations when we return in four years. I know the world's best golfers will look forward to another

trip down under for this thrilling competition."

The Presidents Cup, a team matchplay competition featuring 24 of the world's top golfers – 12 from the United States and 12 from around the world, excluding Europe – is held every two years, and since 1996 has alternated between United States and international venues.

The US team has won four of the six previous Presidents Cups, and the only outright win by the International Team came at the 1998 event in Melbourne.

### OPEN STAYS IN NSW

Meanwhile, Golf Australia announced in February it had signed a deal with the NSW Government to keep the MFS Australian Open in the state for the next three years, following the successful running of the 2006 tournament at Royal Sydney Golf Club (superintendent John Odell).

The announcement came at the same time as Golf Australia's decision to alter the traditional end-of-year tournament schedule. Normally the first tournament of the season in November, the Australian Open will now be the last before Christmas, played from 13-16 December, while the Mastercard Masters at



**The Australian Golf Club will host the 2007 Australian Open**

Huntingdale Golf Club (superintendent Michael Freeman) kicks off the tournament season Down Under from 22-25 November. This year's Open is set to return to The Australian Golf Club (superintendent David Honeysett) which last hosted the event in 2004.

The new arrangements also come at a time when a new deal was struck between Golf Australia and Golf Australia Golf Holdings Ltd (GAHL), owners of Moonah Links (superintendent Leigh Yanner) on Victoria's Mornington Peninsula.

The new agreement enables Moonah Links, which has hosted two Australian Opens in 2003 and 2005, to host three Open tournaments between 2010-2020, with GAHL holding the option to host a further two Opens in the following 10-year period should the championships be "successful".

## STORMWATER SCHEME SECURES FUTURE FOR THE GRANGE

The Grange Golf Club in Adelaide was the centre of attention on World Wetlands Day in February with the launch of its new \$2.8 million wetland and stormwater reuse scheme.

The project, which is managed by the Adelaide and Mount Lofty Ranges Natural Resources Management (AMLR NRM) Board, is the first of a number of investments to protect water resources of the Adelaide Plains, with similar projects already in the pipeline for Glenelg and Royal Adelaide golf clubs.

The Grange project harvests stormwater runoff from nearly 500 hectares of surrounding suburbs, cleaning it in a series of constructed wetlands and pumping the treated water into the underlying aquifer for storage for later use. Some 300 megalitres of urban stormwater will be diverted each year from Trimmer Parade and West Lakes Boulevard stormwater catchments into the wetland and away from the marine environment.

Federal Minister for the Environment and Water Resources Malcolm Turnbull was on hand to officially open the project which has been funded 30 per cent by the club and 70



**The Grange Golf Club in Adelaide unveiled its new \$2.8m wetland system in February**

per cent by the State and Federal Governments through the AMLR NRM Board.

While the golf club itself will benefit from having a more reliable water source, other broader benefits of the scheme include:

- an improvement in groundwater pressure in the local aquifer;
- a contribution to long-term salinity reduction in the local aquifer;
- an increase in local biodiversity and

recreation of native aquatic habitats; and

- a reduction in polluted stormwater inflows to the receiving waters of West Lakes lake, the Port Adelaide River, Barker Inlet and, ultimately, the Gulf St Vincent.

The Seaton-based club, home to newly appointed superintendent Richard James, will play host to the world's leading amateur golf tournament – the Eisenhower Trophy – in late 2008 along with Royal Adelaide Golf Club.





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## HUNTER'S ACC-99D TAKES CHARGE



**Hunter Industries has just released its most powerful irrigation controller – the ACC-99D**



Hunter Industries has expanded its controller line-up with the addition of an all-new, two-wire decoder system. The ACC-99D uses two-wire decoders to control up to 99 stations without giving up the collection of features that has established the ACC as Hunter's most powerful controller for large and sophisticated sites.

Decoder installations continue to be one of the fastest growing forms of technology in irrigation control. A key advantage over conventional systems is that decoder systems use less wire for an overall system. That in turn means lower cost as well as quicker installation times and easier system diagnosis and repair. Systems can be easily expanded by adding in more decoders rather than running additional wires.

The ACC-99D can operate dozens of solenoids, kilometres away. Each sensor decoder can monitor up to two remote sensors, over the same two-wire path used for decoder/solenoid activation (up to 3km away).

In addition, each ACC-99D controller may have one flow sensor (responding to station level) and up to four weather sensors (with individual programme-level response). On board diagnostics, overload protection, current sensing, and line fault detection are all standard, along with Hunter's surge suppression circuitry.

### Other benefits of the Hunter ACC-99D include:

- Real-time flow sensing. Identifies a system's low flow or overflow conditions instantly, before resulting damage (to either the system or surrounding landscape) occurs. When the limits are exceeded, the controller shuts off that part of the system.
- Instant system status: Diagnostic displays and LEDs on output module show line activity, solenoid and decoder status, electrical consumption, and other valuable data.
- Easy decoder sensor identification: Includes 1-, 2-, 4-, and 6-station units, plus the sensor decoder, all in compact, waterproof enclosures with colour-coded wiring connections.

**For more information on the ACC-99D two-wire decoder system, contact your local authorised Hunter distributor, or visit [www.HunterIndustries.com](http://www.HunterIndustries.com)**

## TORO GDC SYSTEM IN CONTROL

Toro is answering greenkeepers' requests for affordable, reliable and flexible irrigation decoders with the introduction of the new Toro GDC System, a two-wire irrigation control system. The innovative system uses technology found in aerospace applications, which allows for longer wire runs and more simultaneous valves in operation. It can be configured to have a capacity of up to 3200 stations.

"We believe the innovative new Toro GDC decoder system will provide the industry with the easiest product to work with during design and installation," says Kenne James, senior

marketing manager for Toro Golf Irrigation. "It's also the easiest product for greenkeepers to own."

The Toro GDC System uses new low-power solenoids on sprinkler heads and on automatic valves. This technology allows contractors to install decoders as far away as 4.5km from the central station using a single 2x2.5mm<sup>2</sup> cable. The system also supports up to 800 stations per wire path and as many as 3200 stations per system.

The new system provides designers and contractors with flexibility as they design, install, expand or renovate an irrigation system.

The system's decoder capacity and installation range significantly reduce the amount of wire needed for installation, and it is easy to tap into the existing wire path to accommodate future redesigns or expansion.

"With many courses needing to renovate or lengthen holes to match advances in golf technology, the GDC System provides the flexibility to add more heads with minimal hassle," says John Dalman, product manager for the Toro GDC System.

The system's decoders are available in 1-, 2- and 4-station models with colour-coded wire to identify each station. Each decoder comes pre-addressed so no programming is required upon installation and they feature built-in surge protection to reduce system damage during lightning storms and will continue to operate even if one decoder is damaged.

### The Toro GDC System is available in two versions:

- The stand-alone system, GDC-100/200, which accommodates up to 200 stations and features a programming interface;
- The PC-based system that uses the SitePro Central Control system to provide a user with the most advanced features of any central control system. This version can accommodate up to 3200 stations, pump station integration, and sensor input decoders.

**For more information about the Toro GDC System, visit [www.toro.com](http://www.toro.com) or call Toro Irrigation customer service on 1800 130 898**

## BE PREPARED WITH SELECTA KITS



**Selecta spill response kits come in 20-, 80- or 120-litre sizes**

Fuel, oil and chemical spills are virtually inevitable but with a Selecta spill response kit from Silvan they can be quickly and safely cleaned up. The kits are ideal for any application where chemicals, fuels and oils are stored and used.

There are three Selecta kits available in a variety of sizes to suit a variety of applications. Every kit is available with or without a complete



set of personal protection equipment that includes gloves, goggles, a respirator kit with filters and coveralls. The kits also include a variety of containment components such as absorbent pads, socks, pillows and FloorSweep.

The kits are available in a 20-litre container (for spills up to 15 litres), an 80-litre bag (for spills up to 80 litres) and a 120-litre wheelie bin (for spills up to 120 litres). A full range of replacement components are also available from any Selecta dealer.

The individual spill response kit components include absorbent pillows (except in the 20 litre kit). The absorbent pillow is an environmental alternative to prevent ground contamination from slow leaks or drips. They will fit into virtually every tight space and are particularly useful for continuously running equipment which cannot be turned off until routine service time. There are also absorbent pads that are ideal for the recovery of virtually all liquids and oils whilst not being effected by strong acids or oxidising chemicals.

**To find out more about the Selecta Spill Response Kits visit [www.silvan.com.au](http://www.silvan.com.au) or call 1300 SILVAN.**

## RAIN BIRD DEVELOPS ESP

Designed to accommodate all high-end residential and commercial installations, Rain Bird's new ESP-LX Modular controller is being touted as the most user-friendly modular controller ever. With its flexibility, design and simple programming, the ESP-LX Modular controller saves contractors time and money by making installations more efficient and reducing callbacks.

Starting with an eight-station indoor or outdoor base model, the ESP-LX Modular has the capacity to expand up to 32 stations in increments of four- or eight-stations. Whether it's a simple home installation or a complex installation that requires advanced programming features, the ESP-LX Modular can be easily adapted to fulfil any project specification.

All ESP-LX Modular modules are hot-swappable,

allowing contractors to install modules in any available position without powering down the controller. It also features a large display for simple operation and flexible programming options to meet specific landscape needs.

The ESP-LX Modular includes Rain Bird's 'contractor default', which allows the contractor to set his or her own default programme that can be automatically restored at a later date. In addition, the ESP-LX Modular enables automatic monthly

seasonal adjustments to cut back on watering during cool weather and increase during hot weather.

**For more information on Rain Bird's ESP-LX Modular controller, contact Nick Moschis on 0418 171 230 or email [nmoschis@rainbird.com](mailto:nmoschis@rainbird.com). For more technical information on this product visit [www.rainbird.com](http://www.rainbird.com).**



**Rain Bird's new ESP-LX Modular controller**

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It's always good to see the back of summer and good to have a break from the long days, even though this summer was certainly not one of our harshest. March has been a bit unpredictable with very hot and humid days and grass growing so quickly you can barely keep up with it. During February and March I saw more disease – including three infestations of stem weevil – than we experienced during the whole of summer, and from all accounts it was a similar situation throughout Sydney.

## NSWGCSA BOARD

I would like to thank the whole Board for their efforts over the past six months. It's not easy to keep up with the association's requirements as well as run your own golf course through the trying summer months.

The NSWGCSA held a Board meeting at Shortland Waters Golf Club in February. During the meeting we reviewed the findings of a survey which was distributed to members at a recent education day. This information will be considered when determining future events.

Some recent initiatives we are working on as a result of the feedback are;

- Developing an assistant superintendent's education day to help assistants understand the role of a superintendent;
- A change in venue for the annual Ambrose event, with this year being held at the Newcastle Golf Club (Stockton); and

- A number of topics were suggested for education which will be reviewed in due course.

The NSWGCSA calendar of events for 2007 was also finalised and is as follows:

- 7 May: Directors Meeting (Wakehurst)
- 18 June: Annual Ambrose Day (Newcastle)
- 16 July: Directors Meeting (Camberay)
- 27 August: AGM (Cabramatta)
- 30 October: Education Day (Roseville)
- 5 December: Christmas Cruise on Sydney Harbour
- 15 December: Directors Meeting (Orient)

More recently, the NSWGCSA calendar kicked off with the Rube Walkerden Golf Day at Royal Sydney. Mark Waugh agreed to be our guest speaker for the day. Thanks to the Royal Sydney Golf Club for changing the club's policy on shotgun starts. It's great that such a club recognises the importance of our industry. A full report on the day will be included in the next NSWGCSA report.

Elsewhere, membership has recently increased by approximately 30 per cent to 312 members and the number is still on the rise thanks to the marketing efforts of one of our director's, Craig Wright.

Speaking of directors, Justin Sheehan has taken up the position as course superintendent at Coffs Harbour Golf Club. Congratulations to Justin and his family on the move north. Justin will remain on the Board which is great news

as he is an outstanding contributor. Let's hope he doesn't go any further north!

We are also continually seeking ways to improve and manage the workloads of the directors and so last year we appointed an administration officer to assist with the finances and excess workload.

Without doubt this has been very successful, and allows the directors to concentrate on other issues. I would like to thank Alison Jones for all her hard work over the past six months as we build a better association for our members.

I would like to thank outgoing VGCSA president Mark Prosser for forwarding their new colour newsletter. We were very impressed with the presentation of the newsletter and without doubt colour is the way to go. We are currently reviewing the look and feel of our newsletter as a result!

## AUSTRALIAN AMATEUR CHAMPIONSHIPS

Congratulations to Gary Dempsey and his staff at New South Wales Golf Club on hosting the Australian Amateur Championships in March. The course was an absolute picture and having spoken with some of the overseas players, I guarantee the reputation of Australia's finest golf courses will continue.

**ANDY HUGILL,  
PRESIDENT, NSWGCSA.**



After an extremely hectic and stressful summer I am sure most superintendents will be looking forward to the quieter winter period that is fast approaching.

In early March members of the GCSAWA executive committee met with John MacPherson, principal environmental noise officer with the Department of Environment and Conservation (DEC), to discuss the long-overdue issue for noise management on golf courses.

The general feedback from this meeting was extremely positive, with a commitment from the DEC to work closely with the GCSAWA over the next 12 months to draft an industry best practice plan for noise management on WA golf courses.

Most of the credit for the success to

date in regards to this matter must go to Jeff Lane (superintendent, Joondalup Resort) who continues to devote much of his time and energy to developing this plan. The most positive outcome will be that it is used by clubs and local government bodies to consistently and fairly manage noise emissions from our normal daily maintenance operations and to deal with any possible resulting complaints.

There are a number of events coming up which are must-attends. The association looks forward to the Management Challenge being hosted by last year's shock winners Mount Lawley Golf Club on 8 May. All members should have received registration forms by now so please register. If you have not received yours please contact one of your committee.

In late July, the industry will converge

on Cairns for the 23rd Australian Turfgrass Conference and Trade Exhibition from 22-27 July. Early indications lean towards excellence interest in the event from WA so jump in quick. Registration forms are available from the AGCSA or you can download one from the AGCSA website.

On a closing note I would like to congratulate those superintendents who have completed recent course redevelopments and wish those who are still slogging away all the success in their projects. Additionally, I would also thank all of our members across all categories for their ongoing support of the association.

**BRAD SOFIELD,  
PRESIDENT, GCSAWA.**



It seems so long ago that we were at the Carlton Brewhouse for the Nuturf Education Day in March, and what an education it was! From learning that the brewery produces 1100 stubbies a minute and dispatches a million cartons a day, to the excellent range of speakers on the day, there is little wonder that members are still talking about it.

Unfortunately, a combination of a clash of dates and public holidays forced the postponement of the April Simplot Day but it will still be held later in the year.

Next on the agenda is the Globe Australia Education Day which is on Tuesday, 22 May at The Boomerang Farm GC in Mudgeeraba. Nine holes of golf will be available either early before the meeting or later after the meeting. Information and discussion on the following will form the agenda for the day (call Peter Abel from Globe Australia for all the details):

- New U.S approach to managing 328 couchgrass greens;
- Benefiting from the application of trace elements in turf management practices;

- Spray applications workshop.

Following the Globe Day the Annual Bus Trip finds its way to Coffs Harbour on the weekend of 23, 24 and 25 June. Don't delay in reserving your spot as it normally fills very quickly.

## DRUMMUSTER

drumMUSTER is a very important programme and we urge all GCSAQ members to start mustering your empty chemical drums. It really is quite easy to take advantage of the system so give Colin Hoey a call on 0428 964 576 if you are in south Queensland, or Bill Davis on 0428 691 760 if you are in the north of the state, for all the details.

## THEY SAY...


- Dave Morrison has finally finished school life and took on Windaroo Lakes at the end of April.
- Ben Tilley took over the reins at Headland Golf Club in mid-April.
- Bonville's Scuttsy has "retired" from

Australia's own 'Augusta' and has taken up a position with Floratine.

- Penbo has recently taken over things turf at the QDPI Redlands Research Station.
- Steve Clifford makes a return to Queensland in his role with GCSAQ gold sponsor North Pine Motors.
- Barry Cox was looking quite trim and healthy on his way to 31 stableford points in his first game of golf after his recent bout of convalescing. A trip to Melbourne with his mates golfing followed by a caravan adventure with wife Joyce and possibly a guest appearance on the Bus Trip is Barry's plan for the next few months.


The 23rd Australian Turfgrass Conference again heads to Queensland in 2007 with Cairns playing host from 23-27 July. The AGCSA Golf Championships heads to Paradise Palms Country Club, while Half Moon Bay Golf Club will host the AGCSA's Corporate Cup.

**PETER LONERGAN,**  
**SECRETARY, GCSAQ.**



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Hi everyone and welcome to another update from the NZGCSA. Things are starting to build over here as the New Zealand Turf Conference draws closer. The event is set to be held in Wellington from 15-19 July at Westpac Stadium. Registration packs are out and they can be downloaded from the conference website at [www.nzturfconference.org.nz](http://www.nzturfconference.org.nz). As the name of the conference suggests it is not just a golf conference, with all other sectors of the turf industry catered for.

During the conference the NZGCSA will be celebrating 75 years. This will be commemorated with a dinner at the James Cook Grand Chancellor Hotel on Sunday, 15 July, which is preceded by the NZGCSA golf tournament to be held at Miramar Golf Club.

All life members are being invited to attend as are all past presidents of our national body. It will be an event not to be missed. The camaraderie that exists in our industry is something special and when events like these come along they tend to be talking points for years to come.

Guest speakers at the conference include Peter Donkers, winner of the 2006 AGCSA Claude Crockford Environmental Award. Dr Jim Murphy from Rutgers University will be presenting papers on organic matter control,

agronomy trends and fertiliser trends in the USA, while recently elected GCSAA president Ricky Heine will present papers on golf course design, turf issues and human resources in the USA. Combine these speakers with a number of local superintendents and agronomists presenting papers and it augers well for a very successful week.

### REGIONAL ROUND-UP

Our regional associations are reporting good attendance's at their respective training days so far this year. However, these numbers are still down on previous years as a superintendent's life continues to get busier.

We are also getting reports of superintendents in different areas leaving the industry for various reasons, but the common one appears to be frustration with a lack of resources and wages.

While this is not an issue at most metropolitan clubs in New Zealand, it is out in the regions. It is a worrying trend and one that apart from the obvious, I don't know how we can make the changes to reduce this from happening more and more.

**BRETT BURGESS,  
PRESIDENT, NZGCSA.**



### TGAA ACT

If anyone out there is currently in possession of 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 offering various courses at the certificate and diploma level. This includes offering certificates in Level 4 horticulture, although a diploma in horticulture is a prerequisite for entry to this course.

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

The TGAA ACT, in conjunction with CIT, is still in discussions with the Irrigation Association of Australia (IAA) in relation to the introduction of its new national certification. The IAA has been made aware of the importance for the

introduction of such a scheme by CIT and TGAA. It is hoped that such a scheme will prevent the installation of in-ground reticulated water systems by untrained persons and provide a solid basis of training for those who wish to install such systems.

The TGAA ACT and its sponsors are currently finalising arrangements for the mid-year seminar. The proposed topic for this year's seminar is 'drought stress' and will cover such things as management tools and techniques, new products and practices and maximum utilisation of a minimal resource, namely water. The seminar has been tailored to meet the requirements of a wide range of turf situations. With water being such a finite resource these days, no turf manager can afford to miss out. For further details, please contact Gary Dawson on (02) 6207 4605.

**JUSTIN A.K. HASLAM,  
COMMITTEE, TGAA ACT.**



They say you don't realise what you've got until it's gone. Well, for the SAGCSA, that saying is ringing true as we begin operations without our enthusiastic past president Peter Harfield following his resignation from Blackwood Golf Club.

Peter has overseen many changes within our association in recent years, and along with Steven Newell (past secretary), carried the lion's share of the workload that has seen us come from a very precarious position to one of stability and now to one of being able to re-invest in our industry.

On behalf of all association and industry members, I would like to offer my sincere thanks to Peter for his outstanding contribution and wish him every success in the future.

Our executive committee is working on ensuring the upcoming two-day meeting with our general managers in May is fruitful and we encourage as many members as possible to respond positively when details are released.

Dates for our annual general meeting in June are being finalised at the time of writing, and we look forward to a strong representation of members at Blackwood Golf Club to hear of the latest developments within our association, as well as showing support for new superintendent Steve Pellatt.

Despite some cooler weather and the odd refreshing shower, the drought remains well and truly in place, and this is reflected by many clubs receiving notice from the State Government that it is considering the introduction of permanent conservation measures or Level 2 or 3 restrictions on groundwater use. Representatives of our association have met with South Australian Golf Association and club delegates to discuss an industry response to these proposals. We will be working very hard to ensure the level of irrigation management expertise we have within our industry is considered very strongly in any policy development the Government is considering.

While we could all see this coming at some point, it still serves as a timely reminder to members and their clubs that we need to be able to demonstrate our ability to efficiently manage what we acknowledge is a precious resource, so that we can continue to provide the social, environmental and economic benefits the game of golf, and our courses, offer.

**DARYL SELLAR,  
ACTING PRESIDENT, SAGCSA.**



Since our last report the VGCSA has held two very interesting meetings. The first was the education meeting on 26 February at Southern Golf Club (sponsored by Nuturf), while in late March we headed to Bright Golf Club for our annual country meeting (sponsored by Globe).

A very big thank you to Southern Golf Club for allowing us to use their spectacular new clubhouse for the education meeting which was our first event for 2007. Due to short notice, Southern was fantastic in allowing us to use their facility but unfortunately the course was fully booked so the keen golfers had to settle in the bar for our happy hour at the conclusion of the meeting.

To host superintendent Greg Rooke, thank you for supporting our day and taking us on course for a very informative inspection of the greens and newly constructed 12th hole. Hopefully soon those dry lakes will be full of irrigation water again; we can only hope.

To our three superintendents who were on our educational panel to address the 90 members who turned up, thank you to Sam Myott (Heritage Country Club), Colin Morrison (Flinders Golf Club) and Nathan Bennett (The Sands, Torquay) for your informative and open discussions.

A spectacular setting greeted us at Bright Golf Club for our annual country meeting which was held from 25-26 March. Congratulations to the club for its hospitality and to host superintendent Cameron Wickes for his informative course inspection and presenting the course in magnificent condition.

A very well deserved winner of golf on the day was Ted Boltong from Active Safety. Longest drive came from Matthew McLeod



**The 2nd hole, Moonah Course, The National Golf Club**

from Tocumwal Golf Club, while Ashleigh Tyler from Nuturf bagged nearest the pin. The NAGA award, best I not say, but better luck next time Andrew.

The next VGCSA meeting will be our AGM which will be held at the magnificent The National Golf Club on the Mornington Peninsula on 7 May.

At our AGM in May I will be stepping down from the committee and as such this will be my final report as VGCSA president. I would like to take this opportunity to thank all the current and past committee members I have been involved with. Everyone has always taken on some form of responsibility which makes the workload evenly spread.

The current committee has put in a lot of work to assist members of the association communicate easily with each other in the

form of a larger newsletter and an updated and user-friendly website. This committee has made themselves available to all members and has listened to members requests. It has been a pleasure to work with all of them.

A special thank you to our administration officer Lesley Mitchell. Lesley keeps us all in line, gently prompts us when things are to be done and the extra tasks she takes on are what make it a pleasure to have her as a major part of our association. Thank you also to the Commonwealth Golf Club for supporting me throughout my time on committee, especially the last two years as president.

Enjoy your reading and I look forward to seeing you all at The National for our AGM sponsored by Toro.

**MARK PROSSER,  
PRESIDENT, VGCSA.**

## TGAA WA

Our first event of the year was the annual President's Breakfast, held at Kings Park, in February. It was great to see 40 members attend the BBQ breakfast. Kings Park is a popular venue with members and turf manager Vinny Kapur and his team always present the park in superb condition.

In April we held our first regional seminar in Bunbury. This was the first time the association has held an event outside of Perth and I was delighted with the response. Over 40 people attended from all over the southwest of WA, which provided a great opportunity for us to expand our membership base as we work

towards becoming a statewide association.

The main theme of the seminar was water management and we had an interesting programme of speakers, including Dr. Louise Barton (UWA), John Forrest (Challenger TAFE), Andrew Ogden (Western Irrigation), Peter Ruscoe (Sports Turf Technology), and Doug Hall (Irrigation Association).

A short course for turf wicket curators commenced during April, run by Challenger TAFE in conjunction with the WACA. This is the first course of its type that provides specialist training in turf wicket management with formal accreditation on completion. Our association

recognises the need to develop more expertise in this area and we have helped to facilitate the establishment of the course.

The three-year kikuyu project at UWA is due to be completed later this year and there is agreement among all stakeholders that the facility must be maintained and the research continued. A proposal has been submitted to extend the study on water management and renovation techniques. The association will continue to make financial contributions towards the research.

**PETER RUSCOE,  
PRESIDENT, TGAA WA.**



On 20 March the TGAA VIC held a Drought Response morning. Approximately 80 people attended and some fantastic initiatives came out of it. The first speaker was David McGeary (Sportsturf Consultants) who ran through his company's procedure for assessing the safety and playability of ovals. He gave some examples of the company's findings and provided the group with methods to overcome particular problems.

Roylen Hawke from Hawke Ridge Optics educated us on the latest weather monitoring equipment on the market. He also spoke of the different soil moisture sensors available and other turf related equipment.

Once again we had representatives from Yarra Valley Water who described what Stage 4 restrictions would mean for us all. The one positive thing that came from their attendance was the promise that they would take six of our key issues back to their group meetings to discuss. These issues will certainly not be a quick fix but at least the water authorities will be aware of our problems now and have

a better understanding of them. We just need to keep chipping away to have our problems raised and looked at.

Rob Sundblom from the City of Monash spoke and gave examples of how he and his staff assess and record their renovation requirements prior to scheduling such works. Rob has formulated some fantastic documents for recording oval requirements and we thank him for his informative handouts. If any readers would like a copy of these forms please contact the office on [admin@tgaa.asn.au](mailto:admin@tgaa.asn.au).

Our next speaker was David Goldie from the City of Greater Geelong. David gave a very detailed account of how they have been managing their ovals since restrictions started back in July 2006. He spoke of a community-based programme that was formulated to raise money to renovate and irrigate five ovals in each of their three competitions to enable football to go ahead. It was fantastic to hear what can be achieved when people think laterally and put their heads together to resolve some very challenging problems.

Final speaker was Jim Keppel from Carey Grammar and myself. Jim spoke about his access to river water and how that access has recently been cut. Jim explained what grass types he was using and how they have been coping under different watering regimes.

Being the last speaker I think I managed to put most people to sleep. For those who stayed awake long enough, they heard what practises we at Geelong Grammar have put in place to deal with Stage 4 water restrictions. This included trucking in water and storing it in large tanks in a similar manner to that of the City of Greater Geelong. Anybody wanting any further information about these talks can contact the above email address.

Upcoming TGAA VIC events include the Bursars Day at Eltham College on Thursday, 10 May and the Cricket Wicket Seminar to be held at the MCG on Wednesday, 4 July. I hope to see you at one of these great days.

**MATT HANRAHAN,**  
COMMITTEE, TGAA VIC.



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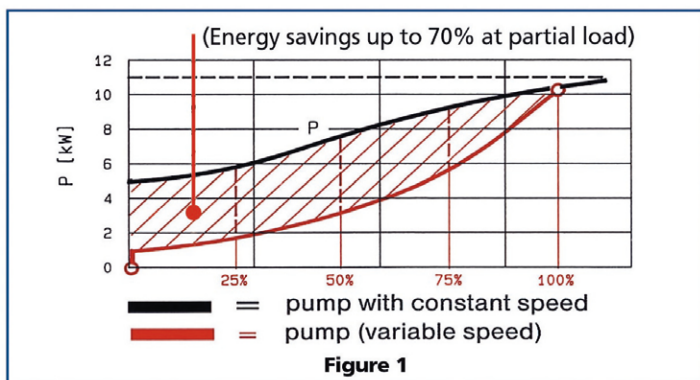
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**Brendan Graham, A&M Watering**

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