WINNER OF 16 AWARDS AT THE TOCA INTERNATIONAL COMMUNICATORS CONTEST 2006 - 2008

AUSTRALIAN Turfgrass MANAGEMENT JOURNAL

www.agcsa.com.au

VOLUME 11.2 MAR-APR 2009

7 February 2009

THE DAY A STATE BURNED

Australian turf industry rallies around bushfire victims

w
organisations
to get through this
rst natural disaster.
s edition's extensive
editor Brett Robinson
h Horsham Golf Club
rintendent Tim Warren
r with his dedicated
ly beginning

Horsham's 'hell on earth'

As Tim Warren will attest, they breed golfers pretty tough up in Victoria's Wimmera district. Even with the mercury tipping the mid-40s on 7 February and a fierce northerly wind blasting the course, the Saturday comp at Horsham Golf Club was in full swing and the field was good.

Dropping his wife Kate off at the impressive eight-year-old clubhouse, the club's pride and joy, Warren then did what he has done most Saturdays in the four years he has been course superintendent of the western Victori
down to the mainten

Warren knew it was going to be a scorcher that day – the official temperature would eventually reach an incredible 47.4°C (***see page 18 for more on the record temperatures which hit Victoria in February - Ed***) – and he knew he would need to come back later in the afternoon to do a bit of syringing. Leaving the course he convinced himself that all was good and was confident that the bentgrass green would make it through until he came bac few hours later.

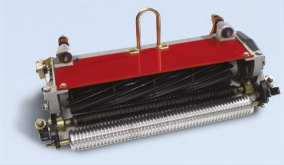
Leaving the course he headed h
hower, bundled the kids
to the l

The Greensmaster® 3150.
Count on a perfect result.

13th Beach Golf Links - Bellarine Peninsula, Victoria
4th Hole, Beach Course

Toro® DPA Cutting Units

Introducing Toro® DPA cutting units.



With its "one click" bedknife-to-reel adjustment, Toro DPA cutting units are designed to adjust and cut as one consistent reel. Each component is precision manufactured, and only Toro's patented DPA cutting unit ensures the cut remains constant over the life of the reel, giving you a consistent cut across all three cutting units, day after day. Toro DPA cutting units, helping you achieve the consistency you need across all three reels.

For customer service call 1800 356 372 or visit www.toro.com.au

TORO® **Count on it.**

The world's BEST nets

HIGH SAFETY SCREENS THAT RE-DEFINE WORLD DESIGN AND ENGINEERING STANDARDS.

Country Club International are Australia's most experienced designers and installers of golf barrier screens – ranging from under 10m up to 30m high – the tallest in Australia. We have introduced almost every significant technology advancement in safety netting over the last 20 years, including golf ball trajectory analysis, the latest high tech Redden polyester netting and engineering innovations that set world standards in pole and rigging design to increase strength whilst reducing the visual impact.

Pictured: Ringwood Golf Course adjacent to Melbourne's new Eastlink Freeway.
At over 30m tall using step tapered poles this fence is engineered to withstand winds in excess of 160kph.

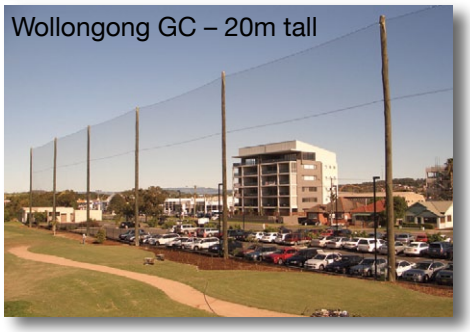
Ryde Parramatta GC – 30m tall

Cranbourne GC – 10m tall

Moore Park GC – 20m tall

Brighton GC – 12m tall

Malvern Valley GC – 18m tall


Wollongong GC – 20m tall

FOR FURTHER ADVICE AND A NO COST NO OBLIGATION APPRAISAL PLEASE CALL:

HEAD OFFICE:
Mike Baker 03 9776 9066
VICTORIA:
Allen Middleton 0418 993614
NEW SOUTH WALES
John McCafferty 0408 611580
QUEENSLAND
Brendon Hill 0409 611580

COUNTRY CLUB
INTERNATIONAL

Administration & Warehouse:
25 Cumberland Drive
SEAFORD. VIC 3198
Phone 03 9776 9066
FREECALL 1300 138804
Email: info@countryclubcom.au
Web: www.countryclub.com.au

SUPPLYING THE BEST. NOTHING LESS.

SUBSCRIPTION FORM

WINNER OF 16 AWARDS AT THE TOCA INTERNATIONAL COMMUNICATORS CONTEST 2006 - 2008

I wish to apply for:
One year's subscription to Australian Turfgrass Management
(Six editions per year)

		PLEASE TICK BOX
ONE COPY PER EDITION	$55.00	❑
O/S ONE COPY PER EDITION	$76.20	❑
TWO COPIES PER EDITION	$86.00	❑
THREE COPIES PER EDITION	$130.00	❑

Prices include GST.

ORDERS CAN BE MADE SECURELY ONLINE THROUGH www.agcsa.com.au

Name: .....

Company: .....

Postal Address: .....

Town/Suburb: ..... State: ..... Postcode: .....

I enclose cheque for (amount): .....

Please charge my credit card: ..... ❑ MasterCard ..... ❑ Visa .....

Card Number: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Expiry Date: ____/____

Cardholder Name: .....

Address: ..... Signature: .....

❑ Please send me more information about becoming an AGCSA member

Forward to: Australian Turfgrass Management
Suite 1, Monash Corporate Centre
752 Blackburn Road
Clayton, VIC 3168
FAX: (03) 9548 8622

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

Production:
Editor:
Brett Robinson Ph:(03) 9548 8600
brett@agcsa.com.au

Art Direction & Design:
Jo Corne Ph: (03) 9548 8600
jo@agcsa.com.au

Advertising:
Melissa Wallace Ph:(03) 9548 8600
melissa@agcsa.com.au

AGCSA
Suite 1, Monash Corporate Centre
752 Blackburn Road, Clayton, VIC 3168
P: (03) 9548 8600
F: (03) 9548 8622
E: info@agcsa.com.au
W: www.agcsa.com.au

AGCSA

AGCSA Board
President: Allan Devlin
Directors: John Odell
Pat Pauli
Bryce Strachan

General Manager
John Neylan (AGCSATech, Education and Environmental Initiative)
john@agcsa.com.au

Membership
Pip Dudley
info@agcsa.com.au

Accounts
Philip Horsburgh
philip@agcsa.com.au

Events Manager
Simone Staples
simone@agcsa.com.au

AGCSATech
Andrew Peart and John Geary
andrew@agcsa.com.au
jgeary@agcsa.com.au

HR & Best Practice Manager
Daryl Sellar
daryl@agcsa.com.au

Executive Assistant
Melissa Wallace
melissa@agcsa.com.au

Printed By
Impact Printing
69-79 Fallon Street
Brunswick, VIC 3056

Proudly supported by
HAL
Know-how for Horticulture™

Copyright © 2009
The AGCSA believes that material sourced and produced for Australian Turfgrass Management is accurate, but gives no warranty in relation thereto, and disclaims liability for all claims against the AGCSA, its subsidiary companies, its employees, agents or any other person which may arise from any person acting on the materials contained within. No portion, in whole or part, may be reproduced without the written permission of the AGCSA.

contents

COVER:
Victoria burns: The ferocious bushfires of early February had little regard for many golf courses and turf facilities across Victoria. Horsham Golf Club in the state's west was one of the worst affected.

Main Photo:
iStockphoto.com
Cover Concept:
Jo Corne-iStockphoto.com

Horsham's hell on earth 8

The horrific bushfires that razed thousands of hectares of Victoria in early February will be etched in the Australian psyche for generations to come. Officially the country's worst natural disaster, the bushfires had traumatic consequences for a number of turf industry practitioners who could do little as the ferocious fires tore their lives and livelihoods apart. ATM recounts one of the darkest days in living memory and looks at how the turf management profession has rallied around those in a time of need.

The Royal treatment 22

Over three years ago Nigel Taylor decided to chance his arm and head overseas to forge a career as an expat superintendent. Today he finds himself the superintendent of two championship golf courses in the tiny sultanate of Brunei. Taylor looks back at the journey which has taken him to south east Asia and some of the unique challenges he now faces.

New-look Eagle Ridge takes flight 28

During the summer of 2007-08, Eagle Ridge Golf Course superintendent Scott Balloch was fortunate enough to live every superintendent's dream – maintaining a golf course with no golfers. But as he explains there was a little more to it than that.

Family first as Porter steps aside at Royal Melbourne 44

The need to spend more time with his young family is the prime motivation behind Jim Porter's shock decision to step down as course superintendent at Melbourne's famous Royal Melbourne Golf Club.

Rod Riley, OAM (1937-2008) 46

Last December the Australian turf industry bid farewell to Rod Riley, OAM. ATM pays tribute to the pioneering former Greenlees Park Bowling Club greenkeeper who helped to revolutionise an industry.

Cooper's Calling 48

Late last year Globe Australia national marketing manager John Cooper achieved a life-long personal challenge to paddle the length of the River Murray. Cooper reflects on his 46-day adventure which not only gave him a new appreciation of the comforts of home, but also opened his eyes to the plight of one of Australia's great waterways.

OPINION
An architect's perspective on golf course maintenance 42

Golf course architects have a significant influence on the way golf courses are ultimately presented and maintained and in this edition five designers are asked how much consideration they give to course maintenance when creating their latest natural masterpiece.

RESEARCH

Long-term monitoring of nutrient loss in golf course runoff 52

Golf courses are often constructed close to natural water bodies and the development of a new course often represents a dramatic change in land used. US researchers undertook an eight-year study to assess the water quality changes with the development of a new championship golf course.

IN EVERY EDITION

Foreword Thinking 6
AGCSA Member Benefits 7
AGCSATech Update - Poa Control Forum 34
Tech Talk - Fungicide Applications 40
Turf Technicians 56
On the Move 58
Around the Trade 60
Book Shop 62
State Reports 64

Contributors to Australian Turfgrass Management Volume 11.2 (March - April 2009)

Scott Balloch (Eagle Ridge Golf Course); Gary Beehag (M. Collins & Sons); Andy Blacker (SAGCSA); Patrick Callaby (Celtic Manor Resort); Tony Cashmore (Cashmore and Associates); John Cooper (Globe Australia); Mike Cooper (Mike Cooper Golf Design); Neil Crafter (Golf Strategies); Pip Dudley (AGCSA); Michael Freeman (VGCSA); Dave Gove (Horsham Golf Club); Bob Jeffries (Conquest Couch); Stephen Lewis (TGCSA); Josh Leyland (Churchill Park GC); Graeme Logan (STA NSW); Peter Lonergan (GCSAQ); Peter McMaugh (Turfgrass Scientific Services); John Neylan (AGCSA); Andrew Peart (AGCSA); Scott Petersen; Jim Porter (Royal Melbourne GC); Phil Ryan (Pacific Coast Design); Nigel Taylor (Royal Brunei GC); Justin Trott (Thomson Perrett); Brad Tucker (Whittlesea GC); University of Kansas; Tim Warren (Horsham Golf Club); Brock Weston (TGAA ACT); Darren Wilson (GCSAWA); Craig Wright (NSWGCSA).

Rising from the ashes

Where does one begin? What words can you possibly pen that start to explain the events of 7 February 2009, a date which will forever be etched into the Australian psyche. Anything you write seems insignificant, trite and even disrespectful when you comprehend what those directly impacted by the Victorian bushfires must have experienced when the sky opened up and rained down an orange fury of epic proportions. As I write this editorial, nearly two weeks after the horrific events of that Saturday, a smoke haze still hangs over Melbourne as a grim and acrid reminder of the events that changed a state and a nation.

The impact of these fires has been felt through every thread of Victorian society. We all know someone who has been impacted by the fires. I was dropping off my two-year-old son Kristian (yes, 'the hurricane') at childcare on the Monday after the fires and came across a notice on the front door informing parents that one of the centre's carers, Vicky, had lost everything. Fortunately, she, her husband, their three children and her mother and father, who all lived at their Strathewen property, survived but only after they sought refuge in their pool. A few days later my wife Kat learned that one of the mothers in the hurricane's playgroup lost a cousin and his family. The hurricane definitely got a bigger hug from dad that night.

For the Australian turf management community, the bushfires have also had tragic consequences and this edition is devoted to telling the stories of those in the industry who have had their lives and livelihoods turned upside down as a result of what we now know as Black Saturday. We catch up with Horsham Golf Club superintendent Tim Warren and his crew who are rebuilding after fire ripped through the course on a day which peaked at 47.4 degrees. We also recount the story of Horsham assistant superintendent David Gove who together with his wife Sandra battled to save their property which borders the club.

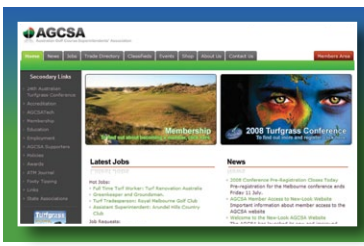
Then there were the deeds of turf producers Don and Sally Gallenti in Kinglake West. Don saved a couple out the front of his property who, inexplicably, were planning to ride the fires out in their car. In the days following, the Gallentis then turned their home into a makeshift refuge for neighbouring families who had lost everything.

While there were many close shaves and tales of survival, the industry will be distraught to learn that two if its younger members have been hardest hit. The apprentice at Marysville Community Golf and Bowls Club (whose name ATM was unable to confirm at the time of going to print) lost his mother and brother, while Whittlesea Golf Club greenkeeper Daniel Shaw lost everything after his girlfriend's parents' home in Pheasant Creek where they were living went up in flames. The hearts of an industry go out to these two young chaps and they can both be assured that the industry is thinking of them and will do whatever it can to help.

The turf community must be congratulated for the way it has rallied around those affected in the weeks following the fires and talking with Tim Warren he continues to be overwhelmed by the generosity of his peers and industry colleagues. Turf managers are a pretty resilient bunch but every now and then it's comforting to know that in times of need you have the support of an industry if it all gets too much.

To end on an upbeat note, even though the horrendous events of 7 February will leave indelible scars, both physical and mental, in true turfie spirit you can always guarantee that someone will find the funnier side of things. Take for instance the Horsham Golf Club machinery shed. Although still standing after the fires abated, all the mowing equipment and workshop gear contained within was destroyed. That prompted one bright spark to spray paint in large letters on the side of the warped shed – 'The Webber'. The man responsible? Tim Warren.

Brett Robinson
Editor



HAVE YOU SEEN THE 'NEW LOOK' AGCSA WEBSITE?

www.agcsa.com.au

JOHN NEYLAN, AGCSA GENERAL MANAGER

Standing strong in a time of uncertainty

At the time of writing we are well into 2009 with Christmas a distant memory, the global economic chaos still with us, the hottest day on record having occurred in Melbourne (46.4°C), floods in north Queensland and devastating fires across Victoria. The loss of life in Victoria puts into perspective what is really important in life and a few bits of sun burnt grass seem irrelevant in the grand scheme of things.

Planning for the year ahead has been at the forefront of the AGCSA's activities, particularly as we ponder what effects the economic turmoil will have on the golf industry and most importantly the employment conditions for our members. From an AGCSA perspective we are in a financially sound position and this is a result of our strong membership, our fantastic commercial partners and the success of the 2008 Melbourne conference. All these factors mean that the AGCSA has the resources to provide all its member services until the world settles down and we can fully understand how the golf industry will be affected.

The AGCSA is constantly reviewing the budget for each department and ensuring that income is in line with expenditure. As a not-for-profit organisation we have always used surpluses to improve member services, however, a conservative approach to management has ensured that there is always money in the bank for a "rainy day".

In terms of 2009 we have some good things ahead and we have been fortunate to secure funding for several of the AGCSA's initiatives. The Water Initiative and the publication of research information in Australian Turfgrass Management and on the website have been co-funded over the next three years by Horticulture Australia and we have excellent support from Toro, Bayer and e-par (principal partners) as well as Simplot and Ecologic International for the Environmental Initiative.

Any not-for-profit organisation relies on the support of corporate partners and sponsors in order to develop and deliver a range of services to assist its members. It is with this in mind that we encourage all our members, wherever possible, to consider using the products and services provided by our trade sponsors. If we support the trade they will continue to be able to support our association. As an association we also rely on our members to support AGCSA events and to continue to remain as members.

The 24th Australian Turfgrass Conference in Hobart this July is our regional event and is at an affordable price which we hope will entice members to attend as well as bring along a staff member or two. Last year's conference was always going to be hard to beat and the challenge for us in 2009 has been to come up with a programme that will both engage and inform delegates. Interestingly, the key for this year's conference has been the questions left unanswered from last year.

In Melbourne our discussion forums on human resources and personal management revealed some interesting facts related to the stresses associated with managing a golf course.

Drought, water shortages, high expectations, tight budgets, the lack of qualified staff and the never-ending paper trail are challenging many superintendents and turf managers and in some circumstances they are leaving the industry as the burden becomes too much to bear. Why is the turf manager expected to shoulder each of these challenges, while maintaining a high quality facility as well as developing long term solutions? For better or worse, the turf manager lives and breathes every little aspect and challenge put before them, often with limited support and understanding.

In recognition of the fact that turf managers are faced with different challenges and not all of them agronomic, this year's conference will be exploring the 'three aspects of health – turf health, personal health and well-being and financial health.

Tasmania is going to offer delegates an opportunity to experience turf in a unique environment, including the opportunity to experience the golfing challenges of Royal Hobart and Tasmania Golf Club, while the pre-conference tour to Barnbougle Dunes and Ratho is one not to miss.

The AGCSA faces 2009 with confidence and looks forward to assisting members wherever possible and maintaining its association with our valued trade partners.

Horsham Golf Club was left in ruins following a devastating bushfire which ripped through the course on Saturday 7 February. With extreme temperatures and gale force winds from the north, the course erupted into flames around midday destroying course vegetation, the clubhouse and a machinery shed

The destructive bushfires which raged throughout Victoria in early February brought a nation to a standstill. As this edition of Australian Turfgrass Management was going to print, the death toll stood at 200 with over 7000 people displaced and thousands of homes and livelihoods destroyed. A number of Australian turf industry members were caught up in the life-changing events of Black Saturday, as it has now become known, and in this edition ATM looks at how these individuals and organisations have managed to get through this country's worst natural disaster. To begin this edition's extensive coverage, editor Brett Robinson talks with Horsham Golf Club course superintendent Tim Warren who together with his dedicated crew and club is slowly beginning the painstaking task of rebuilding one of Australia's renowned country courses. Photos: John Neylan

Horsham's 'hell on earth'

As Tim Warren will attest, they breed golfers pretty tough up in Victoria's Wimmera district. Even with the mercury tipping the mid-40s on 7 February and a fierce northerly wind blasting the course, the Saturday comp at Horsham Golf Club was in full swing and the field was good.

Dropping his wife Kate off at the impressive eight-year-old clubhouse, the club's pride and joy, Warren then did what he has done most Saturdays in the four years he has been course superintendent of the western Victorian course. Heading down to the maintenance compound he set the irrigation system for that night before going on a quick tour of the course to check everything was in order.

Warren knew it was going to be a scorcher that day – the official temperature would eventually reach an incredible 47.4°C – and he knew he would need to come back later in the afternoon to do a bit of syringing. Leaving the course he convinced himself that all was good and was confident that the bentgrass greens would make it through until he came back a few hours later. (***See page 18 for more on the record temperatures which hit Victoria in February - Ed***)

Leaving the course he headed home, had a shower, bundled the kids into the car and went down to the local plaza to do some shopping. Coming out of a toy shop Warren's three-year-old son James grabbed him by

the arm and yelled 'Look daddy, fire engine'. Warren looked across to see a couple of fire trucks speeding past. They were quickly followed by a grader and a water tanker. Warren then bumped into one of his contacts from the local water authority who told him there was a fire in the south west of the town and that in his words "I'm not sure how they are going to stop it."

"After that it's a bit of a blur," recalls Warren. "I was at the supermarket and purely by chance I rang Kate to ask her what she wanted for dinner that night. The next thing I know she's telling me she is okay, that all the clubhouse staff were leaving and that she was getting a lift back into town with the chef. She also told me not to come out to the course and to keep the kids at home.

"I'm going to Kate 'what on earth is going on!' It was then she explained how Jason (Maybery), our club manager who lives on the western side of town, had rung the club to warn them that a fire was approaching and to get everyone off the course and evacuate the clubhouse immediately.

"By this stage I was going off at poor Kate, wanting to know why no one had called me! She said the fire simply caught everyone by surprise, arriving so quickly that all they could do was get out as fast as they could. Within 45 minutes Kate was home and the anxious wait began."

HELL ON EARTH

Throughout the rest of Saturday afternoon Warren literally had the mobile glued to his ear. Phone call after phone call was made to Maybery who had stationed himself at a police roadblock a few kilometres away ▶

Below: Despite a harrowing time immediately after the fire, Horsham superintendent Tim Warren (left), apprentice Mick Warren (centre) and assistant David Gove are slowly getting the course back on track

MARYSVILLE COMMUNITY GOLF AND BOWLING CLUB

As this edition was going to press, Australian Turfgrass Management was still to get in contact with Marysville Community Golf and Bowls Club superintendent and AGCSA member Robert Christie to confirm the state of damage to the golf course.

ATM has however been able to ascertain through good friend and fellow superintendent Mark Jennings (Box Hill Golf Club) that Christie and his family are all safe, but tragically his apprentice lost his mother and brother.

Marysville, which at this time is still under lockdown by the Australian Federal Police, was one of the hardest hit communities when the bushfires broke out. In a case of fortuitous timing, Christie, his wife Jill, son Daniel and daughter Sheridan left Melbourne the Thursday before the firestorms for a family holiday in Hong Kong. According to Jennings it was to be their last family holiday together and it proved to be their saviour.

According to Jennings, the Christies arrived back in Australia the Friday after the fires and only got into Marysville after coming in through Alexandra. Christie confirmed with Jennings that while the golf course clubhouse was still standing, his machinery shed and irrigation system had all been wiped out. The fires also caused extensive damage to trees and vegetation and the majority will need removal.

Christie's immediate concern was getting the irrigation system back online and had been in contact with Rain Bird and Brown Brothers. Toro and John Deere had also offered their services.

"Robert is a very resilient bloke but it has hit him pretty hard, especially the news about his apprentice's family," says Jennings. "Robert had to drive through Alexandra and down into Marysville and what he saw left him in a state of shock.

"He was speaking to a resident who was still in town when the fire came through. Apparently because it was such a hot day they had their house closed up, the curtains drawn and were sitting there with the air conditioning on watching a DVD. All of a sudden they heard this roar. Looking out one window all they saw was blue sky; they then went to the other side of the house and hell was about to descend. They jumped in the car and a few minutes later the house was gone."

IN THE LINE OF FIRE

While Horsham Golf Club erupted in flames, assistant superintendent David Gove had the more immediate concern of saving his family home. Living right on the course boundary, Gove, together with his wife Sandra and their neighbours, managed to stave off the approaching inferno and save their properties. Gove takes up the story…

"It was about 11.30am when my neighbour came over and asked me if I had my fire plan ready. I did a bit of a double take so he took me outside and all I could see to the north-northwest was smoke.

Our home backs on to the second tee at Horsham Golf Club and is one of three properties side by side in a new estate. Between us the houses would be less than a year old combined.

I can access the course through a gate so we went for a drive. By this stage we could see where the fire was coming from. We knew a chap over that way so we went to check on him and as we got there we watched his house go up in flames. It took all of five minutes. From then on it was all go.

On the way back home I stopped at the course maintenance shed to pick up our firefighter pump. It's a little pump that normally goes on the fertiliser tank and we sometimes use it for irrigation repairs when we need to pump out water. I knew it was disconnected from the fertiliser tank so I could pick it up quickly. I chucked it in the back of the ute, grabbed a hose, went back home and prepared myself.

By this stage my wife Sandra had taken our two boys – Hugh (10) and Angus (8) – over to a friend's place in town and she had come back to help me at the house. I put the pump in the pool and started hosing down the house. We knew which direction the fire was coming from so we concentrated on dousing that side of the house.

Horsham Golf Club assistant superintendent David Gove spent much of Black Saturday alongside wife Sandra defending their home (pictured top) which backs onto the course's second hole. Gove used a small pump, normally attached to the club's fertiliser tank, to help hose down his house. Despite losing a shed and a few bits of timber decking the house was saved

While Sandra was dampening down our house, I was across at the neighbour's place trying to use his garden hose to do the same. He had raced into town to dump all his computer gear (he works from home) and was on his way back out to the property when the fire hit. It was important that his place remained because if his went up ours and the other neighbour's property would have gone as well.

For about half an hour it was a pretty hair-raising experience. Embers were coming from every direction and it quickly burned out a neighbouring paddock within what seemed like five seconds. The flames hit the back fence of our property and lit up all the trees. The heat and the wind were intense and the roar of the fire indescribable. Let's just say it wasn't pleasant.

We had recently put down some straw mulch around our trees and shrubs in the back yard and in some areas that mulch went all the way up to the timber decking. Embers started to ignite patches of straw and at one stage the verandah caught fire. I was still across at the neighbour's property when I heard, above the wind, Sandra screaming at me to get back. I raced back to find the verandah on fire so I quickly grabbed the hose and managed to put it out before it spread. That was probably the most nerve-wracking moment of the whole ordeal.

The fire continued on into the golf course leaving our properties for the most part unscathed. The verandah will need a few boards replaced and we lost a shed down the back of the property which contained a ride-on mower and some bikes, but when you consider what happened elsewhere in the state that day our losses were pretty insignificant. We were very fortunate to walk away unharmed and to still be here talking makes you appreciate things more. Needless to say it was an experience I never want to have to go through again.

After it was all over me and one of the neighbours – Gus – sat back and cracked a few cans. We joked that the experience had been a good bonding session and a good way to get to know each other a bit better.

We sat up until about 5am. Every now and then during the night we would hear these loud cracks followed by an enormous bang as trees continued to fall over. It was really eerie. It was quiet, calm and smoky and some of the tree tops were still smouldering.

Although it is a terrible thing to think, I have been emphasising to the members that the fire is probably a blessing in disguise. There was a lot of debris under the trees that we as a small staff were going to struggle to get around to clearing. In a way the fire has done us a favour.

At the moment the course looks like a war zone, and for me it's hard to get away from because I live over the back fence and you can see it and smell it all the time. But we just have to remain positive and keep going with the clean up. Eighteen months down the track we'll be looking back at all of this and hopefully the course will be back bigger and better than before."

The maintenance shed housing course machinery was still standing but everything inside was destroyed. Fortunately a second shed containing Warren's office and other equipment was spared

from the course. As he waited in vain to get through Maybery relayed to Warren that from a distance all he could see was the fire rolling across the tops of the trees on the course.

Unable to wait any longer Warren told his wife they were getting in the car and going for a drive to have a look. As they got closer they could see fire streaking across paddocks which was more than enough for Kate who wanted then and there to head back home, pack the car and drive to her parent's place in Mt Gambier. Warren, however, remained firm and said they were staying and for that afternoon at least would base themselves at Maybery's home.

At the same time Warren gave his 2IC David Gove a call, knowing that his house was right next to the course and probably right in line of the fire. As it turned out Warren couldn't have called at a worse time. Gove told him straight that he didn't have time to talk, that flames were coming his way and he was on his way to the shed to pick up the firefighter pump to hose down his property. He then hung up. (***See page opposite for Gove's remarkable account of his battle to save the family home - Ed***).

By late afternoon Warren was wearing out large areas of Maybery's lounge floor pacing back and forth before making up his mind to try and get back out to the course. By that stage the fire front had passed through and CFA crews had the blaze under partial control. With Maybery joining him, Warren headed back out to the roadblock and after explaining their situation to the policeman on duty they were able to get through.

First port of call was Gove's place. It was still standing and he and his neighbour were sitting on the deck cracking the first of many cans in celebration after saving their properties. From there Warren and Maybery entered the course through the gate by the second tee and into what Warren describes as 'hell on earth'.

"That is when I got a bit emotional," recalls

ADVANCED HUMIC ACID TECHNOLOGY

• CLEANSE SOIL IMPURITIES • RESTORE MICROBIAL BALANCE • NATURAL DISEASE SUPPRESSION • ACTIVATED NUTRIENT DELIVERY

OMRI Listed HumaBoost™

K & B ADAMS

GUARANTEED FAIRY RING SOLUTIONS
NO-RINGS.COM

FOR INFORMATION CALL:
K&B ADAMS PTY LTD
1800 TURF HELP/1800 887 343
www.kbadams.com.au

3TIER TECHNOLOGIES

03.9752.4133

Some of Horsham's fairways suffered significant fire damage and those containing a layer of thatch showed up the effects more dramatically. A number of greens and surrounds suffered major scorch marks while across the entire course telltale signs of embers demonstrated just how intense the fire was

Warren. "The devastation was incredible. Trees were left black and smouldering, injured kangaroos were trying to hop around and lizards and birds littered the ground having perished from the intense heat.

"My first point of call was the pump shed. A section of suction pipe was still alight so we quickly put that out. Fortunately the 12-month-old pump shed hadn't been touched, which was a huge relief. We could see that the clubhouse was in ruins so Jason made a beeline for it while I went over and met Dave at the maintenance compound.

"The sheds were shrouded in smoke. We opened up the shed containing the office first and it was like an oven. Remarkably nothing had been damaged. Fortunately it stored all our tractors, a Mule, topdresser and chemical storage area.

"We went over to the other shed which houses all our machinery and workshop gear and from the outside it didn't look too bad. Although the walls were buckled out it was still standing so we prised the door open only to discover that everything in side had literally melted. The roof had caved in and all the mowers and other equipment were just burnt out shells. You could hardly touch the door or concrete it was that hot.

"We then went for a walk around a few holes to see the extent of damage to the turf and that's when it hit us. It was like the place had been hit with napalm – blackened trees everywhere, smoke, helicopters buzzing overhead. It was like a war zone.

The fire which gutted Horsham Golf Club started to the north. As soon as it hit the course the dense undergrowth and mass of trees provided the fire with the fuel load it needed

The fires destroyed up to 90 per cent of trees and bush on the course and the club now faces the prospect of having to remove all this material

"After that we went back to the shed and noticed there was smoke coming from behind the irrigation computer. I put my hand up against the wall and it was red hot so I pulled the computer off the desk and chucked it in the back of the Mule. One of the locals was cruising around the area in a big old army truck which had a water tank on the back so we grabbed him, smashed a hole in the office wall and doused the insulation which was smouldering."

THE LONG ROAD AHEAD

With a million and one things swimming through his mind, it was little wonder that Warren got all of five minutes sleep that night. It got so bad that Warren even resigned himself to watching one of the worst batting displays in Test cricket history as the West Indies skittled England for 50-odd runs.

Sunday quickly dawned, however, and with it the solemn realisation of the work that lay ahead. At first light he went to pick up brother Mick, who is also his apprentice, and went by the CFA command centre to make sure it was okay to go out to the club. Warren was informed he couldn't so headed back home and jotted down some notes on the state of the course for the emergency club committee meeting that had been called for later that morning.

Despite the harrowing events of the previous day, Warren says the meeting was really positive. The message was that although there would be some short term pain, the fire had presented the club with a great opportunity to move ahead bigger and better if things were done right.

Over the next couple of days Warren's mobile literally melted. Offers of support and help from within the turf management industry flooded in (more on that later) while he also had to contain enthusiastic members who wanted to help out but couldn't due to the significant OH&S risks out on the course.

Warren's immediate priority was to get water out on his turf. Fortunately the pumps were okay, suffice for that section of suction valve and the fact there was no power. A quick audit of the irrigation system by Gove discovered that while many of the valve boxes around the course had suffered significant damage, the greens control valves were untouched and operational. By Tuesday power had been restored and Warren was able to give the greens their first drink in more than three days.

As this edition was going to print, Warren was starting to fully assess damage to the irrigation cabling and was also pressurising the system to test for any leaks or pipework fractures. There were also a few filtration issues with the pump system thanks to an outbreak of algae which developed after the aerators lost power.

As far as Horsham's prized surfaces were concerned, the turf came through reasonably well. Some fairways suffered significant fire damage and those containing a bit more thatch showed up the effects more dramatically. A number of greens and surrounds suffered major scorch marks while across the entire course the telltale signs of embers demonstrated just how extensive and intense the fire was. By contrast, some areas weren't touched at all, most notably the green around the clubhouse which looked almost unnaturally vibrant against the ashen shell of the gutted clubhouse.

Warren was surprised at how well the greens had fared and was confident that on the advice of AGCSA manager John Neylan, who visited the course the following week, that a good renovation would spark the turf back into life. On 23 February Turf Conditioning Services were due to start renovating all greens with a ¾ inch hollow tine and topdress followed by the ½ inch solid tine Verti-drain. Once the irrigation system is fully functional Warren will assess how much solid turf he needs to repair more severely damaged areas.

The most pressing concern for the course, however, is the vegetation. Horsham Golf Club has always prided itself on its woodland feel and over the years it has been a marketing tool that the club has fully ratcheted to its advantage. Every fairway you walk down is isolated and very rarely can you see the adjacent fairway thanks to healthy stands of trees and bush. ▶

CLOSE CALL FOR FORMER AGCSA GENERAL MANAGER

For former AGCSA general manager Scott Petersen a late wind change on Saturday 7 February saved their eight hectare property at Smith's Gully, just a few kilometres south of the devastating St Andrews fire.

Petersen, together with wife Lea, their three dogs and a couple of chickens, evacuated the property mid-afternoon on Saturday, but an opportune wind change meant their house was spared and, more importantly for them, so too were the lives of their many animals.

"We kept an eye on the CFA website the whole day and our neighbour's husband, who is in the CFA, was keeping us up to date on the outbreaks," says Petersen, who less than a fortnight earlier had departed the AGCSA to pursue a new sports business venture. "By about 1pm the smoke was fairly intense but from what we could tell it was coming from Whittlesea which is a considerable distance from us.

"At about 3pm we got the call from our neighbour informing us there had been an outbreak three kilometres north of us and in her words 'do whatever you where going to do', meaning enact your fire plan now. Our plan was always to leave so I ran upstairs and told Lea that we had to go!

"We then in a panic tried to find the rest of our plan which was buried under a pile of papers in the pantry. After finally going through it we got all the wooden furniture, gas bottles and petrol inside the house, closed all the windows, switched of the air conditioner and grabbed all the important stuff from the safe, including my sport pistol.

This was the photo that former AGCSA general manager Scott Petersen snapped as he and wife Lea sped away from their Smith's Gully property as bushfires closed in on Saturday 7 February. Fortunately a wind change late in the day meant the fires got no more than 1.5km away

"While Lea packed the car I then went out on to the property and opened all the internal gates so the animals weren't trapped if they tried to escape. I captured the goats and removed their collars, cut the tails off the horses (so that if the fires came they wouldn't catch alight) and removed their fly masks (so they wouldn't melt).

"By that stage Lea had the car packed and it was time to go. The dogs went in, then the chickens and then we evacuated. We had to wait for the fire trucks going past our driveway before we could turn on to the road and depart.

"We drove to Lea's mum's place in Templestowe and waited for the change in wind conditions. That came through quick and around 6.30 we raced back out to the house. The animals and property were safe but had there been no change in the wind the fire would have eventually reached us.

"At about 9pm there was a power blackout and it was then that we could really see the extent of the fires. We can see the Kinglake hills from our house and the entire range was glowing.

"It wasn't until Sunday when it hit home just how lucky we really were. We found out that the St Andrews fire ended up being just 1.5km away. A friend who lived at St Andrews lost everything. She was actually returning to her house when the fire descended so she was able to turn her car around and speed out of there.

"Later that day she was informed by the only resident in the street that survived that she had lost everything except for a couple of horses. This resident said that everything in the street had gone and there were people who died in their cars directly out in front of her place. Others tried escaping on foot and there bodies were still on the road.

"We were happy with our decision to leave. Even those with the best fire defence systems in place lost everything. Our biggest regret was that we left some animals behind and our plan has now changed and we will try to evacuate them all should a bushfire threaten again."

The club's eight-year-old clubhouse was completely gutted yet remarkably the green in front of it was left untouched

Unfortunately, in this instance, such a wonderful natural feature proved to be the club's undoing. As Warren notes the fire couldn't have started in a worse area and as soon as it hit the course, the tinder-dry undergrowth and mass of trees provided the fire with the fuel load it needed.

Warren estimates around 90 per cent of trees on the course will need to be removed as they pose a significant OH&S risk. Greg Moore, a former University of Melbourne lecturer and expert arborist, visited the course a week after the fires and as this edition was going to print was finalising his report for the club. In the meantime the club has contracted a company with specialist tree removal equipment and once Moore's recommendations are detailed they will come in and chip those that need to be removed on the spot.

"Being a country golf course it is a very central part of the Horsham community and it is important that we get things back to some form of normality as soon as we can," says Warren. "A week on from the fires and things are starting to move along now and we have a clearer idea of where we are heading. One of the best pieces of advice John Neylan could give me was to make sure I set aside some time at the end of each day to plan ahead for the next.

"Every now and then you see all the hard work that you and the guys have put in over the years which is now gone, but you have to remain positive and focus on the job at hand. You have your peaks and troughs. You get all positive and convince yourself that there is a silver lining in every cloud, but then you get your lows when you think, 'Christ, how much work have we got to do'. It has even been hard on the kids. They have grown up coming out to the course with me checking water, changing holes, so they were a bit upset.

"Our attitude now is that things are still going to be here tomorrow and we just have to take one step at a time and not work ourselves to the point of exhaustion. I'm making sure I give the guys some time off and to make sure they get some time away from here because it can get a bit overwhelming at times. This whole ordeal has been just as hard on them.

"I'm planning to take a few days off next week and head to Robe for the weekend, sit on the beach and do nothing. Kate's parents are going to come up and help with babysitting the kids so it'll give us some quality r'n'r. I might even pull out the sticks and try to recapture some form."

HELPING HANDS

While the road ahead will be long and may at times seem too much to contemplate, Warren says what has helped him and his crew to get through he initial days and weeks after the fire has been the immense support and generosity from the Australian turf management community.

Warren couldn't impress enough to ATM his gratitude and heartfelt thanks to all those who called or sent an SMS to see how he was coping or to offer him the loan of a machine or a few litres of product.

"My phone hasn't stopped ringing," says Warren. "People in the industry, whether from the state associations, the AGCSA, trade companies and my fellow superintendents, were ringing up to offer their support. It really was quite overwhelming and does show what a great industry this is. Family and friends have also been very supportive and I have even roped my father into helping out with the clean up.

"The level of support has been tremendous and it was just so comforting. I can't thank everyone enough. Andrew Peart from the AGCSA was one of the first to call me. I quickly told Geelong's number one ticket holder not to worry about those water tests I was supposed to be sending his way later that week. I suddenly had a few more important things to worry about.

"Richard Forsyth (Metropolitan Golf Club), David Mason (Riversdale Golf Club), Mike Freeman (Huntingdale Golf Club), Nathan Bennett (The Sands, Torquay) and Steve Burchett (Portarlington Golf Club) all called as did a number of the country blokes to let me know that they were there if I needed anything. Steve Hewitt (Thirteenth Beach) sent me a text.

"The support from trade reps has been fantastic too. Mick Licht from Toro and Simon Horne from Precise Machinery were on the phone straight away offering me the use of additional machinery when I needed it. More recently Syngenta (Patrick Madden) and Nuturf (David Blythe) have been very generous and offered support with herbicides, fungicides and PGRs. Mark Eardley at K&B Adams is organising some fertiliser for our renovations, as is Nuturf. Mick Holohan from Globe is also providing us some product to help deal with our algae problem.

"We have even managed to steal the services of the clubhouse chef Steven Hill. With the kitchen likely to be closed for a while we have trained Steve up to cut greens with a walk-behind. They may not be the prettiest lines you've ever seen, but you'll not see me complaining."

With the clubhouse out of action, Horsham Golf Club chef Steven Hill has been trained up to help out on the course

An easier way to deliver

a trusted solution against Kikuyu & Poa

Just add water

*Product is not yet registered. An application is currently lodged with the APVMA.

®Registered trademark of a Syngenta Group Company ABN 33 002 933 717. For further information on products please contact the Syngenta Technical Advice Line: Freecall 1800 067 108 or visit our web site at www.greencast.com.au
Syngenta Crop Protection Pty Limited, Level 1, 2-4 Lyonpark Road Macquarie Park NSW 2113. AD08/327

syngenta®

The week before the devastating Black Saturday fires, Churchill Park Golf Course had to contend with a blaze that destroyed about 100ha in and around the course

Fighting **fires**, saving lives and

Of the many stories to emerge from Black Saturday, it was often the tales of those who witnessed and confronted the fires first-hand which struck a chord. In the second part of ATM's look back on February's deadly bushfires, ATM editor Brett Robinson recounts some of the heroic deeds, tragic losses and narrow escapes for those involved in the turf industry.

CHURCHILL PARK GOLF COURSE
JOSH LEYLAND

As Victoria baked during the last week of January, maintenance staff at Churchill Park Golf Course, located in the south eastern Melbourne suburb of Endeavour Hills, became an emergency fire fighting unit after a car accident outside the club sparked a major blaze.

A car rolled and caught fire on the club's northern boundary and the fire quickly spread through adjacent bushland and onto the golf course. According to Churchill Park course superintendent Josh Leyland, within minutes of the fire entering the course it quickly burnt out the 8th hole and fanned by storng northerly winds continued up the 9th fairway towards the clubhouse.

Within 45 minutes there where 70 CFA vehicles, 10 MFB trucks, DSE units and 350 firefighters on the scene trying to control the outbreak. Five water bombing helicopters were also deployed and took water from four of the course's dams.

The fire got to within 10 metres of the clubhouse, which acted as a makeshift command centre for the firefighting effort, and continued on to burn out the car park, the course's couchgrass turf nursery/practice fairway and vegetation around two dams. Fairways acted as a fire break and stopped the fire burning through the entire course. Embers fell across the course starting small grass fires which where quickly snuffed out by ground staff crews who were patrolling the course with hoses.

Within nine hours the fire was declared under control, thanks to the hard work from the CFA, water bombers and the all-night help from Leyland and his ground staff. The fire ended up burning around 100ha of land and the course was closed until the following Monday. Leyland says he and the staff went straight into clean up mode and had the course back in shape for the club championships which started the following weekend.

A week later, during the height of the Black Saturday fires, a little further south at Cranbourne Golf Club a fire erupted late in the afternoon. Starting on the South Gippsland Highway opposite the club's main entrance, it managed to jump the highway and burn through the neighbouring quarry paddocks on the north side of the club's main access road.

Fortunately for course superintendent Rod Tatt, a cool change arrived in time and the fire was swiftly brought under control by the CFA with minimal damage to the club's boundary fence and driveway.

WHITTLESEA GOLF CLUB
BRAD TUCKER

When Brad Tucker arrived at Whittlesea Golf Club around 4pm on Saturday 7 February to do a spot of hand watering, he had the inkling that things weren't quite right. The horizon was shrouded in thick black smoke, the heat was intense and the wind was howling from the north – all the ingredients for an impending catastrophe.

The Churchill Park fire was sparked following a car accident outside of the course's northern boundary

mourning losses

As if a portent of things to come, within a minute of powering up the diesel pump, which enables him to manually water the course, it boiled over and shut down. Just as he was contemplating how to get some water out to his parched greens, he heard a roar that will remain with him for the rest of his days.

Looking up at the range which stretches for about three kilometres in front of the course, the sight that greeted Tucker made him reel. The hills exploded orange as the front, which Tucker estimates must have been at least three kilometres long, came up and over the hill and swept down towards the course at a terrifying pace.

Ditching any plans he had for handwatering, Tucker went into survival mode. He quickly doused down the maintenance shed and all the machines inside and then shut the door as embers started raining down across the course. A policeman saw Tucker beavering away and came over to tell him to leave. The heat by this stage was too intense and Tucker heeded the advice and departed.

As he headed out the gate, the flames were within 800m of the course boundary and three storeys high. Yet just as quickly as the fire tore down the range, consuming everything in sight, a wind change came through and blew the front away, sparing the course and the clubhouse which were next in line. Unfortunately for about 12 houses nearby and those souls to the east, the change had deadly consequences.

"It all happened so quickly," recalls Tucker. "I knew there were fires when I got to the course but I couldn't see any flames. But then it just came over the hill. It sounded like a jet engine and all of a sudden the range lit up. I just wet down everything as best I could and then closed the shed door. Embers were still coming under the door so I was putting them out too. I stayed as long as I could but I couldn't stand the heat anymore.

"As I was leaving the golf club the fire suddenly changed direction and headed east straight along the back of the course. Where I'm standing now I can see 12 houses that are piles of ash. They wouldn't have stood a chance it was that quick.

"It could have been worse as there were more houses in line but the wind changed and spared them and us. How the clubhouse or maintenance shed didn't catch on fire I don't know because there were embers everywhere. Someone must have been looking over us." ▶

Better release, better environment

Sierrablen's advanced coating increases efficiency and reduces leaching

Sierrablen® products provide a complete range of controlled release fertilisers in 2-3 and up to 5-6 month formulas. Uniform sized and shaped prills ensure smooth hopper flow and even placement, making it ideal for fine to medium mown turf, sportsfields, tees and fairways.

It's unique advanced coating technology increases efficiency and protects the environment, setting Sierrablen apart from other CRF's – performance guaranteed!

Contact Scotts or your local Scotts Distributor –
Freecall **1800 789 338** or visit **www.scottsaustralia.com**.

Scotts
A world of local knowledge™

Also available as Sierrablen® Mini = more granules/m²

5813.0309

ELEMENTS CONSPIRE TO FUEL VICTORIA'S DEADLY BUSHFIRES

To understand why the 7 February 'Black Saturday' bushfires were so catastrophic, you have to look at the conditions across Victoria over the summer months which conspired to create such a deadly situation.

Despite decent rainfall during December (Melbourne recorded 78mm for the month), Melbourne recorded just 0.8mm of rain for the whole of January and as this edition was going to print the same amount had been recorded for the first half of February.

Between 4 January and 7 February – a period of 35 days – Melbourne received no rain which unofficially is the second longest stint without rain the city has endured. According to Bureau of Meteorology statistics, the longest rainless period was 40 days recorded between 19 December 1954 and 27 January 1955. (Melbourne also experienced a 35-day dry spell between 1 April-5 May in 1923).

Then there were the temperatures. After a relatively cool start to the summer, late January saw the state bake. Although recording just four days over 30 degrees up until 19 January, Melbourne hit 40 for the first time on 20 January but it was the following week that set the platform for Australia's worst natural disaster.

It started on Tuesday 27 January with a 36.4 degree day. Melburnians then endured three successive days (28-30 January) of temperatures above 43 degrees, the mercury reaching 43.4 on the 28th, 44.3 on the 29th and 45.1 on the 30th. The latter was, at the time, the second highest temperature ever recorded in Melbourne, behind only the 45.6 recorded on Black Friday on 13 January 1939. (Melbourne's most sustained heatwave prior to this occurred in January 1908 when temperatures reached 39.9 (15 January), 42.8 (16th), 44.2 (17th), 40.0 (18th), 41.1 (19th) and 42.7 (20th)).

Other parts of Victoria also baked that week, with many places having their hottest January day on record. These included Bundoora (Latrobe University), Grovedale (Geelong airport), Heywood Forestry, Hamilton Airport, Maryborough, Moorabbin Airport, Morwell, Mt Buller, Scoresby Research Institute, Wilsons Promontory and Wonthaggi. Many sites also set record highs for January minimum temperatures.

The Bureau of Meteorology's Victorian Climate Services Centre says the extreme heat was due to a blocking high pressure system in the Tasman Sea. The system had directed a northerly air flow over the southeast of Australia, moving an extremely hot air mass over the southeast of the continent.

The following six says (1-6 February) saw temperatures range between 28 and 34, but all eyes were on the forecast for Saturday 7 February. The Bureau issued a severe weather warning for that day and as it transpired they were right on the money. Melbourne would record its hottest day on record – 46.4°C – and combined with wind gusts between 80-100kph the scene was set for a catastrophe. By 9am the temperature in Melbourne was already over 33 and just after 4pm it broke all existing records.

It was an even more extreme scenario in Horsham, in the state's west. Between 20 December 2008 and 18 February 2009 (60 days) the Wimmera district hub recorded just 1.6mm of rain. Temperatures too conspired and Horsham copped an unbelievable stretch. From 26 January to 1 February Horsham recorded 36.4, 40.1, 44.5, 44.6, 44.9, 43.1 and 40.1 respectively. Temperatures eased only slightly in the days following (the lowest was 35.2) before heading back up to 40.4 on 6 February. Black Saturday would see the official temperature climb to an incredible 47.4.

It wasn't until Tucker got back to his home in Epping and had a chance to digest the blanket coverage of the day's events that he got a full appreciation of the extent of the bushfires. At 9pm he jumped into his ute and headed back to see if the course was still there. He was also concerned that he hadn't locked the shed and that looters might rip off some of his gear. He got as far as Whittlesea but was turned back by a police roadblock.

Tucker came back at 3am Sunday but still couldn't get through. Every two hours thereafter he went back and lined up at the roadblock only to be told no-one apart from emergency service personnel were allowed through. During this time Tucker was fielding phone calls every five minutes from committee members and club members wanting to know the state of the course. Some were telling him the clubhouse and maintenance shed had been destroyed and with the CFA and police unable to give him any information, Tucker grew more and more anxious to get out to the course.

It wasn't until 11.30pm on Sunday that Tucker was able to get his first glimpse of the golf club. Driving down one of the back roads about two kilometres away from the course he came across a roadblock. He explained to the policeman who he was and that he needed to know if the place was still there because he was getting so many enquiries from members.

As far as Tucker knew the fire hadn't jumped the road to the course when he left but he couldn't be certain. Tucker managed to convince the policeman to escort him down the road so he could have a quick look. Peering through the fence, the wave of relief that swept over Tucker was enormous. It was still there, intact – clubhouse, shed, everything. Tucker headed back out a few hours later and was again let through and this time went on to the course and started to put some water on the greens.

"The roadblocks have been hard to deal with," says Tucker. "You couldn't go anywhere. I now have an identity pass so that I can get out to the course. Initially their (the police) attitude was 'bugger the golf course', but I explained to them that I needed to get water on to the greens or else they would die.

"Given that we haven't watered fairways for a couple of years and we have had to stop watering tees due to low water levels, we need to keep the greens alive to keep the place viable. If we lose the greens then we may as well shut the place altogether.

"The club has already lost so much money as a result of being closed since the fires so it was vital that we got in there and kept the greens alive so that when the club is ready to reopen the members and public will have something to play on. They (the police) didn't quite get it at first but since then we have been able to get through and get some water on the course and start the process of getting the course tidied up."

Although relieved to find the course was okay, Tucker soon discovered that his young greenkeeper Daniel Shaw had not been so fortunate. Shaw, who had only recently completed his apprenticeship, had been living with his girlfriend at her parent's home in Pheasant Creek (northwest of Kinglake). They barely had time to get out alive let alone salvage any belongings when the fires descended and they now find themselves trying to come to terms with what has happened.

"All Daniel has is a pair of shorts and a jumper," says Tucker. "The poor guy has lost everything. You can't imagine what they must be going through. He wanted to come into work today (Monday 16 February) but he rang in and said would it be okay if he started tomorrow. I told him not to even think about work and to come back when he was ready.

"Everyone has pitched in to help him, his

girlfriend and the family. My wife works for Yakka and they have donated $700 worth of work gear for when Daniel comes back. We have also offered our place to live until they get their lives back on track and I've also offered to buy him a caravan."

Together with his son Dale, who happens to be his apprentice, Tucker has started in earnest the clean up at Whittlesea. When ATM spoke with Tucker on 16 February, he had water back on all the greens, had put out some fertiliser and was about 70 per cent of the way through tidying up (the course had tentatively scheduled a reopening for 23 February). Despite having an army of volunteers available to him, none were able to get to the course because the roads surrounding the club were still closed.

Many of the Whittlesea greens were scorched from the intense heat but now that Tucker has been able to get some water on them they are starting to come back. A number of trees were flattened by the wind and Tucker says they have picked up at least a ute-load of tree litter and debris off each green. Charred pieces of bark littered the course and Tucker still can't believe how the place didn't go up.

Being only on dam water and having no access to town supply, Tucker is now also watching closely his dam levels which have taken a pounding over the period. As Tucker admits they will be pushing it to make it through the rest of summer but they had no other option in order to keep the greens alive. Not helping the situation either was a waterbomber helicopter which topped itself up following a small fire that flared up near the course the following Tuesday.

"It has been hard," reflects Tucker. "We lost our greens about eight years ago thanks to some salty bore water, but that doesn't even come close to this. Sure the course is fine and damage is minimal, it's everything else. We've lost some good friends and the club has lost a number of members. Many others have lost property and all their possessions. It took its toll on me to start with, but I'm okay now. Sure I'm tired – I haven't stopped – but you just keep going. It's more the younger folk and the impact this will have on them.

"It's not much fun to be here, breathing in smoke all day. In the days immediately after the fires there was just a procession of fire engines, ambulances and police vehicles going back and forth removing bodies of the dead.

"When you're out on the course it's hard to look up at the hill that was once covered in bush and full of wildlife and to see it now just a blackened and charred mess. Normally there are golfers out on the course, there are cars in the car park and the clubhouse is busy. At the moment there's nothing. It's a really eerie place to be."

BROADFORD GOLF CLUB
BRENDAN WILSON

Brendan Wilson was enjoying a round of golf at Broadford Golf Club on Saturday 7 February. Sure it was hot but nothing the young superintendent of three years couldn't handle. Strolling down the 15th hole of the course nigh on midday, Wilson was about to take a shot when the fire siren sounded from the clubhouse.

By the time Wilson arrived at the 18th green he had a perfect view of the raging fires in the distance. Moments later water bombing helicopters appeared overhead checking out the course's water storages before heading off into the smoke-filled horizon.

With the course not directly under threat Wilson made a beeline for his brother Adam's property a few kilometres outside Broadford. From 2pm Wilson stayed with his brother to protect the property, but by six o'clock the fire had advanced rapidly and there was precious ▶

EUROPEAN ENGINEERING, WORLD CLASS RELIABILITY

Gianni Ferrari
Grass & debris collection mowers
Wide area mowers
Road sweeper opt

PERUZZO
High Speed Flails & De-thatchers
Collect & Non-Coll.
Hi-lift & On-Ground Dumping

alkè
Petrol, Diesel & Electric Utility Vehicles
4WD, Long Bed & Cabin options

JSB Equipment Pty Ltd
PROFESSIONAL TURF EQUIPMENT

Proudly distributing a "World's Best" line-up, where every product is best in its class!

Grass & Debris Collection mowers (350 to 3000 Ltrs)

Wide Area Mowers (Rotary & Flail, up to 5M)

PTO Flail Mowers & De-thatching units

Utility vehicles up to 1T load + 2T towing capacity

Enivironmental Applications (Benefits for Air, Soil & Water)

JSB Equipment Pty Ltd
PROFESSIONAL TURF EQUIPMENT

JSB Equipment Pty. Ltd.
2137 Frankston - Flinders Rd
HASTINGS, VIC. 3915
P: (03) 5979 2788
F: (03) 5979 2688

For Sales enquiries contact:
John Bird 0407 600 100
"Dealers in all states"

JSB Equipment have a network of 58 dealers covering Australia & New Zealand

Within nine hours the Churchill Park fire was under control, thanks to the hard work from the CFA, water bombers and the course maintenance staff

little else they could do but leave and head back into Broadford.

Remarkably his brother's property was spared. By some sheer fluke the fire split in two and skirted the property before joining back up and destroying two neighbouring properties. Another weatherboard house next to Adam's was also left standing. Wilson would also later discover that a few of his friends in Wandong lost properties but were thankfully still alive.

At 8pm Wilson went out to the golf course to make sure all was okay and got a call from the Metropolitan Fire Brigade after 9pm to turn on all the sprinklers and dampen down the boundaries of the course. The MFB, stationed on one side of the golf club boundary, was planning to use the course as a barrier should the fire get too close to the Broadford township. Wilson sat it out for the remainder of the evening but with the fires less than 1.5km away the wind changed direction and the course, and Broadford, was spared.

In the days following the fires, the course became an important source of water for local firefighting crews tending to spot fires and flare ups. Wilson reckons around 20 tankers took water as well as between 30-40 small trucks came to top up their supplies. Wilson also spent much of Sunday on the outskirts of Broadford helping firefighting crews contain spot fires.

The golf course escaped unscathed apart from a few patches of heat-stressed turf and with power not reconnected until Tuesday some areas suffered a bit of dieback. Once the power was back up Wilson and his sole volunteer helper were able to get water out on the course.

HIDDEN VALLEY GOLF AND COUNTRY CLUB
MICK O'SHANNESSY

It has been a long summer for Hidden Valley Golf and Country Club superintendent Mick O'Shannessy. In fact he'll tell you that every summer for the past eight years has been a bloody slog. If having little water heading into this summer wasn't bad enough, in November a lightning bolt knocked out a quarter of his irrigation system and it wasn't until just before Christmas that the insurance claim went through.

Fortunately for O'Shannessy and his staff the Black Saturday bushfires which started about five kilometres away never got as far as the course. O'Shannessy was in town for a wedding at the time and only found out about the fires after his son-in-law showed him a text message. Hidden Valley at that stage had been mentioned in media reports after residents in the estate which borders the course were told to evacuate as a precaution.

One of the Hidden Valley's members lost his home and to help him and the countless others affected throughout the region, the club has organised a Bushfire Charity Golf Day and Auction on Friday 20 March. The club is hoping to secure the services of Craig Parry, who redesigned the championship course at Hidden Valley, and who alongside fellow professional Nick O'Hern donated $200,000 to the Red Cross Bushfire Appeal.

GREEN ACRES INSTANT LAWN
THE GALLENTI FAMILY

In the aftermath of the bushfires, numerous stories filtered through of heroic acts and gestures as people went above and beyond to help friends and family in a time of need. To finish this edition's look at the bushfire, it's fitting that we can probably add one of the turf industry's own to that list – Don Gallenti, owner of Green Acres Instant Lawn turf farm in Kinglake West.

As fire tore towards the 36-hectare Gallenti family turf farm, which forms part of their 90ha property on Whittlesea-Yea Rd, Gallenti spotted a car on the road outside the property. Heading over to it he saw there were two people huddled inside and quickly told them to take refuge in his home. A few minutes later the fire descended and the car was left a burning wreck. (Gallenti would later discover from the couple, who owned a shop in Kinglake West, they were planning to ride the fire out in their car.)

Setting up sprinklers around the perimeter of his and wife Sally's home, Gallenti was able to keep the fire at bay. Save for a 1000m^2 patch of singed couchgrass and a few trailers that went up in smoke, the family business was still standing and functioning.

The irrigated open expanse of a turf farm is probably one of the safer places to be when a bushfire hits and in the immediate aftermath the Gallenti property became home for two other neighbouring couples who were affected by the fires.

As the roads were closed and no one could come or go, two other couples set up makeshift residence with the Gallentis. One of those couples had lost everything.

While all this unfolded, sons Joe and Anthony Gallenti were a few kilometres south in Whittlesea tending to their properties which were under threat. The fire came to within 800m of Anthony's home and the two brothers were in constant phone contact keeping the other informed as to what was going on. Just as it seemed the fire was about to hit, the wind changed direction and the front headed back up towards Kinglake.

It was then they realised it was beating a path towards the farm. Both Joe and Anthony were unable to get back to help out their parents and it wasn't until the following Tuesday that the brothers managed to make it back up to the farm. Once there they were able to relieve their exhausted father who had kept turf farm operations ticking over by himself all during that time.

Club Car

QUIETLY GOING ABOUT ITS BUSINESS.

The new Carryall 252 electric utility vehicle with exclusive IQ Plus System.

- 48 volt electrical system - 500 amp solid state controller
- Independant front suspension - Aluminium I-Beam chassis
- 4 wheel drum brakes - 500lb bed load capacity
- 16.3cm ground clearance - 24-28kph speed range
- 3.3m turning radius - 4 year battery warranty

Zero Emission Vehicle
IQ Plus System

Club Car

With an email address that begins 'nigeltravel', it's no surprise that Australian turf manager Nigel Taylor currently finds himself plying his trade overseas. Catching the travel bug a few years back, Taylor now works in the tiny sultanate of Brunei Darussalam as superintendent of two golf courses, one of which hosts the Asian Tour's Brunei Open. Here Taylor looks at the journey which has taken him to south east Asia and some of the unique challenges he faces as a turf manager.

Taylor left Australia three years ago and after stints in Thailand and China now finds himself in Brunei

About three and a half years ago, my girlfriend (now wife) and I decided that we would like to try living and working overseas. I had already worked overseas once before when I participated in the Ohio State Program upon completion of my apprenticeship at Sanctuary Cove Resort. During that time I had placements at Pinehurst Resort and Country Club (Course #8) and Congressional Country Club in the USA. Completing the 18-month programme, I then travelled to Barbados to work at Royal Westmoreland Resort and Country Club and later for a season at Royal Blackheath Golf Club in London.

I had thoroughly enjoyed these experiences and as soon as I had touched down in Queensland, I had decided that I would set a goal to once again return to the expatriate lifestyle. I most definitely had the travel bug, but knew that I needed some more experience and some time to develop a few more much needed skills in order to secure good positions overseas.

It was challenging trying to rejoin the Australian workforce after an absence of two and a half years, but thanks to an opportunity from Doug Robinson I was able to join his newest project at Peregian Springs on the Sunshine Coast as assistant superintendent under his son Brent. At the time, the course was in the final stages of grow-in and when completed would be the focal point of the surrounding housing estate.

It was great to see what was essentially swamp land turned into a championship golf course in just a matter of months and I was very happy to have the chance to be part of this development. In all, the Sunshine Coast would be my home for three years and although I thoroughly enjoyed the lifestyle and the job, my desire to return overseas never seemed to diminish.

We set about searching for work throughout south east Asia. My wife is a teacher, which incidentally is also a great job to have if you want to travel, so she started applying for jobs. I tried a few contacts but ultimately it ended up being a case of 'Johnny on the spot', which is advice that Doug had given me when I had told him of my intentions. I must at this point thank both Doug and Brent for the great opportunity they gave me at Peregian Springs those few years ago. It is often the case that when guys return from the Ohio State Program, they struggle to get even a greenkeeping job and I was very lucky to have got what I did when I did and work for a couple of great mentors.

Our first job opportunities were in Thailand and after 12 months there we moved onto Shanghai, China. Unfortunately I would spend seven months out of work before being successful in an application to The Empire Hotel and Country Club in Brunei Darussalam. Brunei is a very small country of only about 330,000 people that is tucked in between the Malaysian states of Sabah and Sarawak and also borders the Indonesian province of

The Royal treatment

Expat Australian Nigel Taylor is superintendent of two courses in Brunei Darussalam – the Royal Brunei Golf and Country Club and Jack Nicklaus-designed Empire Hotel and Country Club (pictured) which hosts the annual Brunei Open which is an Asian Tour event.

The Empire Hotel and Country Club crew prior to the 2008 Brunei Open

Kalimantan, all of which make up the island of Borneo.

Like most Muslim countries, it is considered dry (no alcohol), however, as a non-Muslim you are able to bring in a quota of alcoholic beverages each time you return from leaving the country – luckily! Before I accepted the position I was flown to the sultanate to check things out and meet my prospective employers. When I arrived I was informed that the position was for a golf course superintendent to run two courses – The Empire Hotel and Country Club, a Jack Nicklaus Signature course (EHCC) and Royal Brunei Golf and Country Club, a Ronald Fream-designed course (RBGCC).

My short stint in Thailand gave me a taste of what to expect from the point of view of managing non-English speaking staff and some of the 'local ways'. In Brunei, almost everyone speaks some English, however, across the two golf courses I have 80 staff and six different nationalities to deal with – local Bruneian, Thai, Filipino, Indonesian, Malaysian and Bangladeshi. This has been a great experience and obviously quite challenging and I would say that there are noticeable differences between all the nationalities, language being the obvious one, but also each having their own unique ways of working and learning.

TWO'S COMPANY

The RBGCC Ronald Fream-designed course is a little over 20 years old and was cut right out of the Borneo jungle. It was first built for the sole purpose and use of the Bruneian royal family and as I understand it, there would be some weeks in the early days when no one played the course at all but it was expected to be in perfect condition in the event the family might drop by.

It has played host to some very big names in golf and one of the former Aussie superintendents, Colin Coles, had the chance to play a round with the then-US President Bill Clinton! Colin is still here in Brunei working as superintendent at the Royal Brunei Airlines course located next to the international airport and his advice on different topics throughout my time here has helped me immensely as he has also been the superintendent at both courses.

The greens now total only 0.5 hectares (yes they were once a lot bigger but everything in this climate grows under your feet so fast it is hard to keep up with) and almost all of them are tucked into corners of the jungle that restrict air flow and movement across the ▶

DAVID GOLF
GOLF HARDWARE WITH SERVICE

TEE INFORMATION SIGNAGE
CALL DAVID GOLF FOR ALL YOUR SIGNAGE NEEDS

Sales Desk 1300 790 890 • www.davidgolf.com.au • dge@davidgolf.com.au

Just before Christmas 2008, wild boars tore up the 2nd green on the Royal Brunei Golf and Country Club. Attacking on Friday night, Taylor and his staff managed to patch the green back together inside half a day only to come in the following day to find the boars had struck again

playing surface. This creates a reasonably humid micro-climate in an already humid regional environment.

To add to this, we are in a region that has high rainfall throughout the year and with the RBGCC course sitting in the dense jungle, our greens, at times, have been subjected to outbreaks of algae. Keeping a strong plant, regular spiking (two to three times a week) and aerating the greens (every two weeks) and applying good quality topdressing sand has enabled us to manage this situation.

We have been on a very reliable folia programme for quite some time and having now experienced the weather conditions of a truly tropical environment it seems to make good sense to be applying fertilisers in this way. In doing so we have been able to regulate the growth and also get the most out of our products as the plant is taking them straight up, unlike the granular fertilisers that have a tendency to leach through the profile. Also with the increase in price of granular fertilisers and shipping costs starting to creep up, it keeps the bean-counters happy.

To give you an idea of the rainfall, last year we recorded 4300mm for 12 months. I have heard of higher rainfalls at courses in the highlands of Malaysia and Indonesia but for me that is more than enough! So far this year, January has a recorded rainfall of 996mm received on 27 days of the month!

The EHCC Jack Nicklaus Signature course is a little over 10 years old and given that there is 10 years between the two courses, you can see the obvious advancements in construction technologies that have benefited the EHCC course. What has also aided the EHCC course is the constant expatriate management, most of which has come from Down Under. Luckily for me it means that the course is reasonably easy to maintain and there are limited problems and normal agronomical practices are employed to keep things on track. The EHCC is also fortunate enough to host the annual Brunei Open, an Asian Tour event and in addition we will be hosting in late February the first Senior European Tour event to be held in Asia.

From the moment I arrived at EHCC it was full-on getting ready for the first international tournament I would ever host as a superintendent and I was looking forward to this challenge and opportunity. Fortunately the crew at EHCC had already done two Brunei Opens, so they knew the drill by the time I got there; mostly they just needed a push in the right direction.

During the weeks of preparation leading up to the tournament, I got out every day with the crew to work on the bunkers, which are typically big, Jack Nicklaus style monsters! Having not worked for seven months, this was a huge shock to my system and it almost killed me, but I thought that by doing this I would gain the respect of my staff and my gamble was right, my body however didn't agree!

I have now done two Brunei Opens and as I write we are preparing for (as mentioned) the first Senior European Tour event to be held in Asia, The Aberdeen Brunei Senior Masters. Some of the legends of golf are coming out for this and I am very much looking forward to hosting the week's events.

UNIQUE CHALLENGES

Working as the superintendent for two different golf courses has added some interesting challenges to an already tricky job. The two courses are completely separate operations and as such I report to two different general managers, have two completely separate crews, two different brands of machinery and two courses that operate in different ways.

The only things they have in common are the species of grasses used on the greens (Tifdwarf) and fairways (419). However, even though the courses are only two kilometres apart I have found they react to the weather, traffic and to some degree nutritional requirements in different ways. I put this down mostly to the difference in the age of the greens and the micro environments. As mentioned the RBGCC course is really in thick jungle, but the EHCC courses greens sit among large complexes that allow plenty of air flow and none of the 1.2 hectares of greens are subjected to prolonged periods of shade.

I have found that a good way to learn how to deal with local staff and foreign workers as an expatriate manager is to watch how other senior managers lead their team. This way you can see the right ways and also the wrong ways to get the best out of the staff. I have seen first-hand from other western expats exactly how not to deal with people in general and at times this has been embarrassing, but a learning curve all the same.

Much like managing staff in Australia, you must train the staff to do things the way you want them to, not just send them out and expect them to be mind readers and understand what you want. This principle works well, or at least it has for me, the only difference is I find myself waving my arms in the air a little more, not with frustration but as a method of explaining how to get things done to staff that don't understand a lick of English! You might end up having a laugh with them or them even laughing at you, but ultimately they give you the respect for trying. I also believe that leading by example in whatever environment you're in goes a long way and I always maintain a 'hands on' approach.

Listening to some of the long time staff can also furnish you with some very valuable information, particularly when it comes to the weather patterns and past problems that might have occurred on the course. The importance of gathering this type of information cannot and should not be underestimated. Having the right information to solve problems can really make or break your time in a foreign land and having a good second in charge is also the only way to make progress. I have two great assistant superintendents, one on each course, which makes my life a whole lot easier.

As far as the management of the grass goes, I don't feel that there are too many things that are different from what you would normally experience in Australia. Granted the weather can put a little more pressure on the health of the plant but this is a normal challenge. The real challenges lie in getting products that are reliable and getting them when you want and need them and dealing with the people.

Here in Brunei there are no local suppliers that are golf course specific and this means everything must be imported. The reality is that the process can stretch out for months to get what is needed and in a climate where the weather is not reliable this can thwart even the best-laid plans. I have at times had to do a lot of leg work to get even the smallest thing. It is sometimes even a situation of employing the old saying 'if you want a job done properly you've got to do it yourself' and to get what I have needed in the past I have had to adopt this approach.

As well as hosting the Brunei Open, the EHCC course was venue for a Senior European Tour event in February

When you have enough staff sometimes it is easier and at times tidier to do the job by hand

With a little time spent in both Thailand and China I managed to pick up some very basic words and phrases and while adapting the 'do it yourself' approach have used what I know to build relationships with a few of the more reliable local suppliers of mostly hardware items. Most of these are run by the Bruneian-Chinese and when I start to spit out a few random words of Mandarin it gets a good laugh going. Once they have picked themselves up off the floor they usually trip over themselves to help me out in any way they can. This really makes life easier and I don't mind too much that they are actually laughing at me and not with me!

At times I find myself reinventing the wheel out of necessity to get the job done. When I was in Thailand we had a good old tow-behind Meta-Matic topdresser but nothing to tow it with. It was too heavy to be towed using a golf cart and the only tractor we had was too big to put across the greens, so with little choice left we welded a tow hitch to the back of the Toro Multi-Pro and away we went.

Doesn't sound so bad I guess but at the time I could not believe we were doing it, the Thais couldn't either and it took me a few days to convince them to start welding and stop laughing at my crazy idea. I only wish I had a camera on me at the time when we took it across the first green and it worked like a charm, their looks of amazement were priceless. Generally they are pretty resourceful, but sometimes they are just in need of a bit of positive reinforcement.

I have also managed to get a bit of free entertainment at the expense of one or two locals so far in my travels. I remember one of the first mornings I went over to the RBGCC course I was sitting in my office sending some emails on a morning that was a little wet. As I was typing away I heard a sound coming into the workshop as though something was being dragged.

Before I got out of my chair to inspect I thought for a minute what it might be, but could not picture anything and certainly was not ready for what I saw. It turned out that the Bangladeshi staff had thought it would be a good idea to provide some food for the Vietnamese staff who worked down the road by catching an extremely large python. They had tied the snake to the back of a Carry-all, claiming it was in one of the bunkers that they were trying to rake, and dragged it back across the course to the workshop.

This thing was huge. It had the girth of a putting cup and was about four meters long. I could only stand in shock as I have never seen a snake this big. The Vietnamese love these snakes and before cooking them hang them in trees alive, make a slit just under the chin and drain the blood for drinking – something to do with medicinal purposes! This snake did get some revenge before it became dinner, biting the hand of the guy that was doing the cutting. He ended up in hospital getting injections for all sorts of bacterial infections. I call that 'one-all' and only now after the event can have a laugh at how crazy that was.

Although I am where I am now and have by no means done it hard or rough, I did start my time working in Asia 'the hard way'. Not really having any good leads when I arrived I simply got out and about visiting courses, sending emails and making phones calls to as many people as I could. Through this I have met some great guys who are always willing to do as much for you as they can.

Actually this was not the best approach, however, through this experience I have learnt and gained new levels of patience, perseverance and perspective. I spent a lot of time in the first couple of years doing nothing and a lot of time asking myself if this was such a good idea, but in the end the combination of patience, perseverance and perspective paid off and the experience helped developed the skills to deal with a lot of the things I would have in the past walked away from. I think that is one of the biggest benefits of living and working overseas. Having a very supportive wife also helps a great deal.

As has been mentioned in a few other recent tales from abroad, the expatriate lifestyle is not for everyone but the only way you are really going to find out is if you give it a go. For me and my wife, we love it and would not change any of the experiences we have had so far and look forward to many more in the years to come.

Only Rain Bird® Smart Pump™ Provides Real-Time Communication With Your Pump Station

Install Confidence.® Install Rain Bird® Pump Stations.

Smart Pump™ reduces water consumption and power costs while ensuring the best possible growing conditions on your golf course. Exclusively from Rain Bird,® Smart Pump continuously compares pump station performance and irrigation demand. It will even shut the system down if a break is sensed. **Consult with your Rain Bird Golf Distributor about all the water and cost saving advantages of a Rain Bird Pump Station.**

RAIN BIRD®

Rain Bird Australia
10 Mareno Rd, Tullamarine, Vic, 3043. Freecall: 1800 424 044 Freefax: 1800 424 050
Contact: Wayne Brown (0419 669 679) Troy Barbour (Vic, WA, SA, Tas 0409 123 191) Greg Smith (NSW, QLD 0438 503 070)
Dale Stafford (Technical Support 0409 115 000) Scott Johnstone (Pump Station Sales 0437 078 677)
www.rainbird.com.au Email: info@rainbird.com.au
© 2009 Rain Bird Corporation

New-look Eagle Ridge takes flight

Between October 2007 and February 2008 Eagle Ridge Golf Course closed its gates in order to fully convert all fairways to Santa ana couch. Now with a full growing season under its belt the Mornington Peninsula facility is starting to reap the benefits of a more sustainable course

In the summer of 2007-08 Eagle Ridge Golf Course on Victoria's Mornington Peninsula took the bold step of shutting its doors in order to fully convert its cool-season/kikuyu fairways to Santa ana couch. One year on and the bid has paid off in spades for superintendent Scott Balloch and his maintenance crew who now have a more sustainable course to manage and present.

Eagle Ridge Golf Course is located in 'The Cups' region of one of Victoria's more popular summer playgrounds, the Mornington Peninsula, and located just a few paddocks over from famous neighbours Moonah Links and The Dunes.

Throughout the summer of 2007-08, I was fortunate enough to live every superintendent's dream – maintaining a golf course with no golfers. But there was a little more to it than that. Rather, the decision was made, after extensive research, to convert all fairways from the existing motley mix of cool-season and kikuyu to Santa ana couch.

Since inheriting the superintendent job here from Michael Riordan in late 1999 I had always coveted with great enthusiasm couch fairways and tees. Maintaining predominantly cool-season fairways was placing considerable strain on the club's resources, especially in regards to water.

Eagle Ridge relies solely on bore water for irrigation and has a metered supply of 120 megalitres per financial year with additional water needing to be purchased each year. In 2011 we expect to have full access to Class A water but at the expensive cost of around $360 per megalitre.

As such I felt we needed to reduce our water consumption sooner rather than later and with the issue of water restrictions and drought constantly in the news my proposal to push for a couch conversion programme was given some impetus.

THE GREEN LIGHT

After two previous attempts to get such a project approved, in early 2007 I presented course general manager Wayne Lucas and Eagle Ridge owners the Russo family with my most comprehensive proposal yet. I had carried out and documented extensive research relating to initial costs, method of conversion, ongoing maintenance costs and practices, reduced water usage along with the many benefits couchgrass presented over the existing surfaces.

The suggested method was to spray out the fairways twice, then line plant them with Santa ana couch. In regard to how many fairways we should convert at once, three options were suggested.

- Four to five fairways per year for three years (only one par 3 was to be converted);
- Front nine one year, back nine the next; or
- All 15 fairways at once (not believing for a moment that this option would ever be considered).

After several meetings and many panadols, the call came through in July 2007 that we were going to go with the final option. A bigger shock was to follow. We were going to close the golf course for four months giving up an estimated gross income of $350,000. Neighbouring golf courses were quick to congratulate and thank us, as they realised their summer profits would be up on previous years.

Left: The existing mix of cool-season and kikuyu fairways were sprayed out in October 2007. Pictured here is the 2nd hole looking back down the fairway from behind the green

Bottom left: Twelve hectares of Santa ana sprigs were incorporated across 15 fairways at a rate of 12m3/ha. Sprigging of the front nine began on 30 October while the back nine started three weeks later

Upon receiving the news, my own pressure meter immediately went into the red zone when thinking about what lay ahead. Along with the fairway conversion, other projects which I will mention later were to be carried out as well. I was in disbelief for a few days but also very excited with what was about to unfold.

A meeting was set up with the few members that we have to explain what was going to happen. For the duration of the course's closure members were to be relocated to nearby Rosebud Country Club. The majority of members were supportive, but a few had various concerns. We tried to put these at ease, but the project was to go ahead regardless.

I also stated in the proposal that if we decided to convert to couch, we would require a new pump system, fairway mower and spray machine. Using a front-end loader to pull our 1000-litre Silvan tank with wide boom just wasn't going to achieve the accuracy required in relation to both application rates and boom coverage. It had the turning circle of a B-double truck and spray accuracy was always a challenge.

And so it was agreed to replace each item. A Grundfos VFD pump system was installed in August 2007 while a Toro Reelmaster 5610 AWD and Workman 3300-D spray unit were also purchased.

Fortunately things came together fairly quickly as we only had around two and a half months from getting the green light to our first herbicide application to kill off the fairways. The first and second herbicide applications (the second was applied 10 days after the first) on the front nine were completed by 24 October. Glyphosate at a rate of 10l/ha and Fusilade (Fluazifop–P) at a rate of 7l/ha were tank mixed along with a surfactant/penetrant and applied. The same process was applied to the back nine three weeks later.

Eagle Ridge hosts between 10 and 20 weddings per year in the clubhouse which looks out over our 9th and 18th fairways. About 50 per cent have the ceremony here at Eagle Ridge with the golf course acting as a spectacular backdrop. None of us had thought about the effect dead fairways would have on the weddings!

As it transpired there we had two extremely stressed brides to deal with and so out we went with Green Lawnger. It was applied by hand out of our 1000l fertiliser tank at an unexpected cost of $3000. It was money well spent and we managed to soothe the wrath of two brides-to-be.

TRANSFORMATION

Turf Renovation Australia was awarded the contract to carry out the sprigging. Turf was delivered on site and broken up into sprigs using a forage harvester. Total area to be sprigged was 12 hectares and the sprigs were ▶

Left: Despite being slow to emerge, the Santa ana began to fire around four to five weeks

Below left: Taking advantage of the course being closed for four months, several other projects were undertaken including the reconstruction of five tee complexes, including the 3rd shown here

incorporated at a rate of 12m3/ha. Sprigging of the front nine began on 30 October and was completed four days later. Similarly, the back nine was started on 21 November and took four days also. Eagle Ridge staff hand sprigged around sprinklers. Each fairway was rolled immediately after being sprigged and again the following week.

Each fairway was given about 45 minutes of irrigation immediately after sprigging. 12-15mm of irrigation per day (four separate cycles) was applied daily for the first week, 6-8mm per day in week two, 2-3mm daily in week three and as required thereafter. In November and December, 177mm of rainfall was received and this combined with some good heat and humidity meant we were away to a fortunate start.

After Christmas Day, however, the honeymoon quickly ended. Only 41mm was received over the next three months, 90mm below our average for that period. From the last week of January through to the end of February, there were only five days above 30°C and a staggering 19 days of temperatures below 25°C in February alone. Needless to say not a great deal of growth was evident during this period.

The pre-emergent herbicide Oryzalin was applied to all fairways three days after sprigging. The first shoots were seen poking through the surface after 11 days, but were quite scarce. After three weeks there didn't appear to be a great number of stolons evident. It was at this point where I started to think a forced change of career may be just around the corner, but thankfully after four to five weeks the Santa ana started to move at a fairly healthy rate. (My belief is that the sprigs simply took longer to push through the thatch layer as opposed to pushing through soil only, if they had been rotary hoed in.)

Pivot 400 was applied at 200kg/ha at three-week intervals with the first application put out one week after sprigging, the last in March 2008. Three applications of a urea-based fertiliser (46 per cent) were applied at 200kg/ha throughout the growing period. The insecticide Dimethoate 400 (Dimethoate) was applied at a rate of 500ml/ha every three weeks for prevention of couch fly. Mitacides Apollo (Clofentezine) and Omite (Propargite) were also applied every three weeks through to the beginning of March. Apollo was applied at 200ml/ha and Omite at 200g/ha.

In early February a tank mixed application of Coliseum (Rimsulfuron) and Brush Off (Metsulfuron) plus a non-ionic surfactant were put out for the control of some cool-season grasses and re-emerging kikuyu. Both herbicides were applied at 75 per cent of the recommended rates (Coliseum at 75g/ha and Brush Off at 50g/ha). I did expect the kikuyu to re-establish, but it came through sooner than I hoped. While this mix had knocked out the cool-season grasses without affecting the couch, it only marginally knocked back the kikuyu. A few days later another application of Oryzalin was applied at 3l/ha.

In mid-March, an application of Monument (Trifloxysulfuron sodium) at a rate of 40g/ha was applied specifically for kikuyu control with a follow up application at 50g/ha one month later. Both applications were put out with a non-ionic surfactant. I believe the battle with kikuyu will be ongoing but I'm confident we can get on top of it within two or three years.

Manual topdressing of ruts and machine damage was carried out over several weeks straight after sprigging and the front nine fairways received their first cut (15mm) in the last week of December to encourage lateral growth. The mower was lowered to 12mm a few weeks later.

The course was opened for play on 29 February, 2008 with a corporate day for radio station Triple M. I had concerns about the initial and ongoing use of golf carts coming into our first winter with new and yet to be established couch fairways. Many, many areas were roped off to prevent cart wear. It wasn't a great look but the benefits were reaped heading into the spring 2008 growing season.

By mid-April we had about 90 per cent cover on the front nine and around 70 per cent cover on the back nine which was a bit disappointing. The back nine received the exact same treatment as the front nine but as previously stated sprigging took place three weeks after the front nine.

If I had my time over, I would consider running a field topmaker over all the fairways initially to help the soil-to-plant contact required and hence quicken the growth period. The cost would, of course, be quite substantial.

Four casuals, in addition to our eight permanent groundstaff, were hired for the four month project duration. Permanent staff worked three six-day weeks each month. Upon learning of this prior to the works, a couple of staff members declared this was too much and decided to leave. They were quickly replaced.

Fly over areas on three holes were also redeveloped, the most comprehensive being undertaken on the par 3 8th with new irrigation, bunkers and construction of two stone walls with associated landscaping

MAKING HAY

As mentioned, several other projects were undertaken in and around the couch conversion to take advantage of the course being closed. Five tee complexes, which were also a mix of cool-season and kikuyu, were totally reconstructed. They were killed off in the same way as the fairways were, stripped, re-shaped where required, laser levelled, turfed with Wintergreen couch and subtly landscaped. Patio Design (Jamie Durie's company) completed the landscape design of another four tee systems, but much to my wife's disappointment, one of Jamie's landscape architects met us on site and not Jamie himself.

Over the years, kikuyu had encroached into approaches, green surrounds and some green edges. In August 2007, a 2000m^2 creeping red fescue nursery was sown on our practice fairway. Thirteen weeks later we were lifting turf from the nursery. On each hole where necessary, we twice sprayed out (same herbicide mix as the fairways) the kikuyu from the green edge out to 2.5m beyond the surround perimeter. The dead turf was then lifted.

Surrounds were replaced with Penncross bentgrass (our greens consist of Penncross) and the rough beyond the surround was replaced with fescue from the nursery. We intend to increase the 'ring' of fescue around each surround to at least five metres.

The 'fly over' areas on three holes were also redeveloped, the most comprehensive being undertaken on the par 3 8th. Major works included the installation of new irrigation, two new bunkers and the re-modelling of another, plus the construction of two stone walls with associated landscaping. Just over $40,000 was spent on this fly over alone.

Several existing bunkers around the course were remodelled as well. A new front entrance to the course was built along with some updated landscaping of the carpark. Four new irrigation valves with subsequent lateral pipework and sprinklers were installed. New mounds together with new plantings were added to the 5th and the border of the ▶

Top: As of early February 2009, the front nine fairways have an average cover of 95-100 per cent, while the back nine (pictured here is the 18th) has caught up considerably and is averaging 90-95 per cent

Bottom: With the conversion to Santa ana, Eagle Ridge has cut its water use by 40 per cent

greenside lake on the 2nd was changed from grass to granite rocks.

Two weeks out from the opening date, we needed to get the course back to a reasonable standard at least. All 83 grass faced bunkers hadn't been flymowed once throughout spring and summer. It was a long way back for them. Our concrete cart paths hadn't been edged either. Rough was cut when time permitted which wasn't as often as usual.

Five casuals were employed for the two week period bringing the total staff number to 17. The lunchroom struggled to cope. These latest additions were hired from a local employment agency. Most were constantly being replaced as they were literally here for one or two days, then there was no sign of them again. It was like a revolving door and frustrating to say the least. We managed to make it in the end but we were flymowing the bunkers on the 18th the morning of opening day. Fortunately it was an afternoon start!

SUPERIOR SURFACES

As of early February 2009, the front nine fairways have an average cover of 95-100 per cent while the back nine has caught up considerably and is averaging a cover of 90-95 per cent. I am hoping and expecting to have 100 per cent cover on all fairways before the growing season ends. It will be nice to have the fairways in a stronger position to cope with the winter elements as opposed to last year.

In October 2008 an application of slow release fertiliser (29:1:6) was applied to all fairways. A second application with a similar NPK was due to be applied in mid-February. Monthly applications of a liquid urea-based fertiliser have also been carried out through the growing period to speed up lateral growth. Metsulfuron has been applied (rate of 100g/ha) at six weekly intervals since October to attempt to gain some control over the kikuyu.

The 2nd fairway has received the above applications plus glyphosate (varying rates from 150ml-300ml/ha) tank mixed as somewhat of a trial. An application at 300ml/ha applied in early-January did slow couch growth a little. This rate used during the dormancy period of 2008 was very successful but I will be retreating to a rate of 150-200ml/ha for the next application. No residual effects have been evidenced thus far.

Monument will be applied at at 40g/ha in March immediately followed by an application of the pre-emergent herbicide Oryzalin. A second application of Monument will be applied four weeks after the March application.

I firmly believe we have been able to reduce the percentage of kikuyu over the past 12 months by around 15-20 per cent.

We were hoping to convert four more tee systems during the summer of 2008-09, but due to financial constraints only one has been achieved to date. As funds become available we will continue on with the tee reconstructions. Having only received 1.5mm of rainfall in the past seven-and-a-half weeks, I look forward to bidding farewell to each cool-season tee when the time arrives.

Of course, the couch is a much superior playing surface to that of the old cool-season fairways. In a strange way the couch fairways have even changed the feel of Eagle Ridge and we have had quite a lot of positive feedback from the members and general public. It was always a battle just to keep the cool-season fairways alive through a harsh summer but with our current hot spell the couch is thriving and there is a noticeable improvement in turf coverage almost on a weekly basis.

Our water usage has been slashed by 40 per cent thus far and I hope to improve on this once all fairways are firmly established. I am confident the bold decision to convert all fairway surfaces at once has been vindicated and I look forward to continually trying to improve them.

All up, the total cost of capital works, labour and machinery purchased was just over $600,000, on top of the lost revenue for the period we were closed. There is still a lot to be done including the ongoing tee conversion programme but we now have a base to build on and hopefully improve the golf course going forward. Most importantly, the Santa ana fairways will go a long way to achieving a sustainable future in relation to water usage.

Looking back, the period of the actual conversion was perhaps the most intense four months of my life, but it was also an incredible learning experience. I am grateful for the opportunity presented to me and also thankful for the patience and support given by Wayne Lucas and the Russo family.

ACKNOWLEDGEMENTS

I would like to thank my peers that I spoke to who were extremely helpful and willing to pass on their knowledge. I would like to acknowledge John Neylan and Andrew Peart of the AGCSA. A big thanks also to the groundstaff of Eagle Ridge for their valuable contribution, in particular assistant Steve Johannessen for his tremendous support, enthusiasm and overall commitment. And last, but by no means least, my wife and children who were extremely tolerant of the hours required of me throughout the project period.

More flexibility
More control
More float

Eclipse 122 F

- The InCommandTM control system comprises a D-handle that improves operator comfort and makes the OPC easier to control
- Two power options – Interchangeable system, powered by either a drop-in battery pack or a 4.6hp Honda petrol engine
- New cutting head capable of 50% more float than competitor machines
- Separate adjustable cylinder and traction speeds allow the user to optimise the frequency of clip
- Onboard back-lapping provides quick and easy cylinder maintenance
- Follows extreme undulations without scalping

The Eclipse 122 with either a fixed or floating head, adapts to suit the needs of the most demanding of golf courses. Designed by and for greenkeepers, the Eclipse will help save time whilst battling the most challenging turf conditions

Contact your local Powerturf Center:

QLD	PowerTurf SE Queensland	Lot 334 Christensen Rd, Yatla 4207	1800 720 776
	QMAC	680 Bruce Highway, Cairns 4868	07 4054 1717
	Tracpower	101-105 Ingham Rd, Townsville	07 4772 6455
	Earthquip	195 Gladstone Rd, Rockhampton 4700	07 4927 4222
NSW	Agrimow	307 Pacific Highway, Coffs Harbour 2450	02 6652 9893
	Agrimow	37 Arkwright Cresent, Taree 2430	02 6552 6888
	PJC Sportsturf	3/9 Greenhills Avenue, Sydney 1875	02 9824 0811
ACT	Mitchell Mowers	32 Stanford Street, Mitchell 2911	02 6280 5203
VIC	Metroturf Machinery	21 Drovers Place Pakenham 3810	1800 21 71 21
SA	Squiers Sales & Service P/L	1069 Greenhill Rd, Summertown 5141	08 8390 3017
WA	McIntosh & Son	547 Great Eastern Highway, Redcliff 6104	08 9475 1600
TAS	KBE Machinery	16647 Bass Highway, Wynyard 7325	03 6442 2240
NT	Farm World	Stuart Highway, Coolalinga 0831	08 8983 3199

1800 720 776

powerturf.com.au

PowerTurf
A Trading Division of PFG Australia Pty Ltd

JACOBSEN

Supers speak out on *Poa* control

In December a group of leading Australian golf course superintendents converged on Sydney for a day-long open forum on one of turf's most vexing management issues – controlling *Poa annua* in bentgrass greens. AGCSA general manager John Neylan was also in attendance and here he reviews some of the key points discussed which may help shed some light for superintendents in their quest to achieve *Poa*-free surfaces.

AGCSATech

HAL
Know-how for Horticulture™

Poa annua is the most written and talked about weed affecting turf and has been at the forefront of the minds of turf managers since the 1920s (Zontek, 1987). Piper and Oakley (1921) described the value of *Poa annua* as a turf for putting greens, commenting also that it would be very expensive to control and that such attempts would be hard to justify. The biology, physiology and control of *Poa annua* have been researched more than any other turf problem and still there are no simple effective control strategies.

Poa annua is treated by most turf managers as a weed to be eradicated. Most treatment methods give variable results and repeated treatments are necessary to prevent the proportion of *Poa annua* from increasing. The difficulty in achieving control is due to the large seed bank of *Poa annua* and the potential for year round germination and rapid seedling growth (Lush 1988). This gives *Poa annua* a competitive advantage over other species in mixed swards where the *Poa annua* can colonise bare areas left by mature *Poa annua* plants that have died due to chemical applications or environmental stress.

Poa annua-dominated swards can consist of numerous ecotypes from true annuals through to those that are true perennials and this further complicates any control strategy. For any *Poa annua* control programme to be successful both pre- and post-emergent control is required (Lush, 1990).

At a recent gathering of golf course superintendents in Sydney, the topic of the day was how to achieve 'pure bentgrass' putting surfaces, or, how to keep *Poa annua* out. As part of this group discussion weed specialist Dr. Fred Yelverton from North Carolina State University also added an expert opinion via telephone hook up.

The superintendents came from far afield and represented a range of locations and climates, with each presenting how they combated the invasion of *Poa annua*. The aims of each superintendent were similar in that they were aiming to produce a high quality bentgrass putting surface year round while keeping the greens "*Poa* free". Easier said than done!

With each of the 14 superintendents presenting their programmes it was interesting to note that while there were obvious similarities there was little repetition. This highlighted the fact that every set of circumstances is different and while the general principles remain similar, the specifics can be quite different.

So what was discussed and what can the industry take from it? The first and most important point is the value of getting together with your peers and sharing experiences. This involves not only sharing the successes but also the failures! The following information has been compiled from notes taken during the forum.

Take Home Message One

GET TOGETHER, SHARE AND LEARN.

The biology, physiology and control of P. annua have been researched more than any other turf problem and still there are no simple effective control strategies

POA ANNUA – THE WEED OR GREAT SURVIVOR?

The AGCSA has been undertaking extensive research trials over the past three years looking at the variations in *Poa annua* ecotypes and their sensitivity/resistance to various herbicides (***see previous AGCSATech Updates for ongoing results of these trials - Ed***). Understanding the forms of *Poa annua* that you are dealing with provides an important insight into the likelihood of success or failure and what control strategy is going to be most effective.

All golf greens will have a number of different *Poa annua* ecotypes present at any one time where it exists anywhere from a true annual through to a true perennial with numerous types in between. The annual types germinate, grow, flower, set seed and die in a 12 month period. They are open upright plants that produce numerous seed heads and are prolific seed producers. The perennial types have a very high tiller density, produce a very dense turf and have very few seed heads.

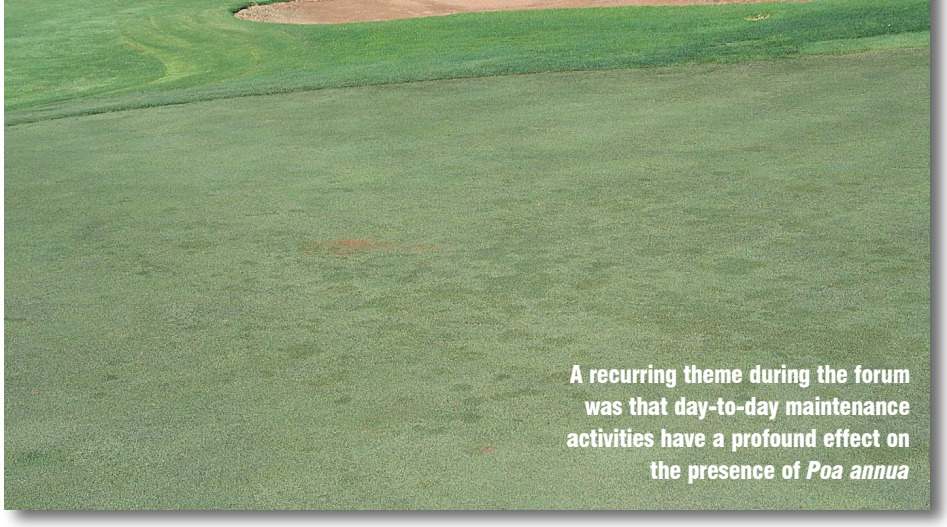
In the AGCSA's studies, seven *Poa annua* types were identified in the trial area and they tended towards being more perennial in nature but varied from very dense low seed head plants to aggressive spreading types with multiple seed heads.

When the individual plant types were subjected to applications of different herbicides, there were distinct differences in herbicide tolerance with the dense, perennial plants most tolerant to herbicides such as endothal and paclobutrazol. These studies also showed that while herbicide programmes can be very effective in reducing the *Poa annua* population, they also have the potential to select out the more tolerant types which then over time will dominate the bentgrass turf.

It is this diversity in the *Poa annua* population and the ability to produce large amounts of seed (at any cutting height) that makes it so difficult to eradicate and why some control strategies meet with limited success.

Take Home Message Two

IDENTIFY THE PREDOMINANT POA ANNUA TYPES WHEN FORMULATING AN APPROPRIATE CONTROL STRATEGY.



A recurring theme during the forum was that day-to-day maintenance activities have a profound effect on the presence of *Poa annua*

TURF MANAGEMENT AND THE PRESENCE OF *POA ANNUA*

A recurring theme during the forum was that day-to-day maintenance activities have a profound effect on the presence of *Poa annua*. The key factors discussed were:

Water quality: Many golf courses have to deal with water high in salts, sodium and bicarbonates which indirectly affect the *Poa annua* population. As the summer progresses, water quality places the bentgrass under stress and by late summer/early autumn the bentgrass can be weakened and lack density. This provides an opportunity for *Poa annua* to germinate and become established.

Renovations: There is no doubt that hollow coring and scarifying in the cooler months can stimulate *Poa annua* germination and create spaces for seedlings to establish. As with all successful weed species, *Poa annua* is an opportunistic plant than can quickly establish itself in a small space devoid of competitors. Autumn renovations in particular are to be avoided and summer coring etc would appear to be more advantageous to the bentgrass and discourages the *Poa annua*. Some golf courses are avoiding annual renovations and this has to be balanced against thatch accumulation, soil compaction and the health of the bentgrass.

Irrigation: Irrigation management was seen as an important tool in restricting the conditions suited to *Poa annua*. That is, deep infrequent irrigations that allow the surface to dry out are preferable to frequent, shallow irrigation. *Poa annua* and its shallow root system is favoured by keeping the top few millimetres regularly watered. The ability to achieve this is dependent on the bentgrass having a deep and healthy root system.

Traffic: *Poa annua* needs an unoccupied space in which to germinate and grow. Any factor that reduces turf density will invariably favour *Poa annua* invasion. Traffic was identified as a key factor that favoured the presence of *Poa annua*. Greens with limited pin placements, poor traffic access (concentrated traffic) and small greens were most susceptible to *Poa annua* invasion.

Greens design: Golf course architects please note – greens that have poor surface drainage, (e.g. gutters through the centre of greens, surface drainage towards the fronts of greens, the lack of multiple runoff areas and surface drainage into key pin areas), will have a greater *Poa annua* population in these areas. Traffic access on and off greens and the size of greens also has a big influence on turf density and therefore the potential for *Poa annua* invasion.

Turf nutrition: A very interesting aspect of the discussion was where turf nutrition fitted into the programme. For many years there has often been a strategy of "starving" out the *Poa annua* by maintaining very low levels of fertility, in particular nitrogen. What became apparent was that it is not so much about the quantity of nitrogen applied but when. A key aspect to *Poa annua* control is to maintain the density of the bentgrass so that it can resist invasion during the autumn/winter periods of the year.

Take Home Message Three

CONTROLLING POA ANNUA INVOLVES CONTROLLING THE CIRCUMSTANCES THAT FAVOUR ITS PRESENCE – HIGH MOISTURE, WEAK BENTGRASS AND COMPACTED SOILS.

POA ANNUA CONTROL PROGRAMMES – WHAT'S WORKING

There were several *Poa annua* control programmes discussed and in the panel on page 36 is a synopsis of what is considered to be working and can be used as a good starting point for the basis of a *Poa annua* control strategy. There are several key points that ▶

need to be considered if a successful control strategy is to be employed;

- A "whole of golf course" approach needs to be taken to control all sources of *Poa annua* infestation. This requires controlling *Poa annua* in the fairways and roughs as well as the greens and green surrounds;
- Use pre-emergent herbicides on all areas outside of the green;
- *Poa annua* control must start early in the life of the green;
- The control of *Poa annua* will involve multiple strategies including moisture control, herbicides, hand weeding and fertility management;
- Maintain high turf density in the bentgrass going into winter;
- Minimise coring and scarifying, particularly in autumn. Note that thatch control is still critical and other programmes such as dusting and regular mini-tyning (and dusting) during summer must be employed; and
- Healthy bentgrass turf = "success".

Take Home Message Four

THERE ARE MANY APPROACHES TO POA ANNUA CONTROL AND A WHOLE OF COURSE APPROACH MUST BE TAKEN.

Controlling *Poa annua* involves multiple strategies including moisture control, herbicides, hand weeding and fertility management

HERBICIDE MODE OF ACTION

There are several herbicides used to control *Poa annua* and by having an understanding of their mode of action will assist in understanding where various herbicides fit into a programme and how to get the best result from them.

For herbicides to be effective, they must enter the plant. Entrance may be influenced by factors such as the shape or orientation of the leaf, roughness of the leaf surface, pubescence on the leaves, presence of wax, or the formulation of the herbicide. For example, it is difficult to obtain good coverage of plants with narrow upright leaves such as *Poa annua* since the herbicide bounces or runs off.

For herbicides applied to the foliage the main factors of concern are:

- Efficiency of leaf retention;
- Cuticle penetration; and
- Leaf absorption.

Once the herbicide is on the leaf it can be subjected to a number of forces:

- It may be lost to the atmosphere due to volatilisation (this happens to endothal);
- The herbicide may dry to a crystalline form or concentrate to a viscous liquid; and
- It may penetrate the cuticle.

ENDOTHAL

Endothal is classed as a phthalic acid and its

POA ANNUA CONTROL PROGRAMMES - WHAT'S WORKING FOR AUSTRALIAN SUPERINTENDENTS

Program One

- Use of endothal in late winter/early spring when conditions are moist and overcast. About three applications (label rates);
- Use of paclobutrazol in spring/summer (refer label recommendations);
- Don't mow when spraying;
- Use air induction nozzles;
- Split the total volume of herbicide to be applied and make two passes across the green for best coverage of herbicide;
- Minimal fertility (low nitrogen) from autumn through to spring; and
- Increase fertility during mid-spring through summer to grow bentgrass and in particular to increase turf density.

Program Two

- Endothal June/July;
- Paclobutrazol every six weeks August through to May;
- Ethofumesate in March; and
- Nitrogen at about 130-150kg N/ha/yr.

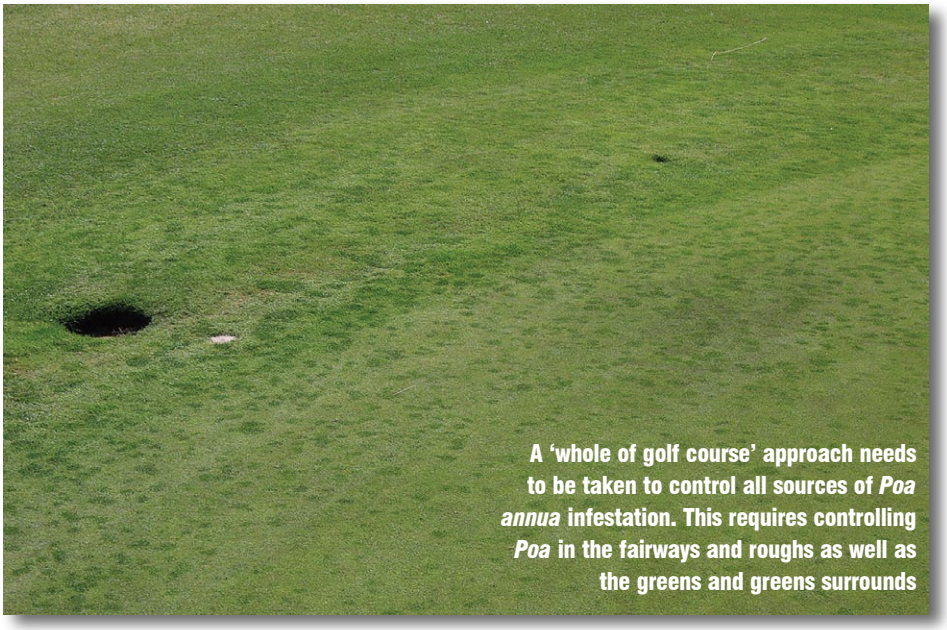
Program Three

- Using paclobutrazol and endothal for post-control with a strong emphasis on pre-emergents (e.g. bensulide). Bensulide is used in a variety of programmes from four applications at half rates from February onwards to two applications at full rates a month a part.

Additional activities

There were a number of additional points made that are worth considering as part of an overall *Poa annua* control strategy:

- Regular hand weeding has an important role in many *Poa annua* control programmes, however, the labour costs are an important consideration. While hand weeding is very effective it can be disruptive to the surface and each spot has to be spotted with sand to aid healing of the bentgrass and levelling of the surface. In some situations the removed plants can be plugged with bentgrass. The work is also repetitive and staff motivation can be difficult if the work is to be done effectively;
- High rates of iron sulphate at about 0.5-0.75kg/100m^2;
- When using paclobutrazol it is important to get the follow up applications on before the effects of the previous application have worn off;
- Spot spraying of individual plants with endothal; and
- Do not use the moss control chemical carfentrazone where bensulide has been used.



A 'whole of golf course' approach needs to be taken to control all sources of *Poa annua* infestation. This requires controlling *Poa* in the fairways and roughs as well as the greens and greens surrounds

exact mode of action is unknown. Endothal inhibits messenger RNA, and thus limits protein synthesis. It decreases the rate of respiration and lipid metabolism and interferes with normal cell division, with defoliation and brown desiccated tissue being typical symptoms. Endothal is a selective contact herbicide that is absorbed through leaves and roots and it is suggested that endothal can cause the death of plants by direct injury to root tissues subsequent to absorption.

BENSULIDE

Bensulide is a Group E herbicide which works by inhibiting mitosis. Bensulide inhibits root growth and has an inhibitory effect on cell division. It is a soil applied pre-emergent herbicide that is adsorbed onto root surfaces with some also being absorbed by the root. A negligible amount, if any, is translocated upwards to the leaves. Research has shown that bensulide damages roots and root hairs in both cool- and warm-season grasses. It is classified as being strongly sorbed in soils although it does possess a tendency to leach to a greater depth than other pre-emergent herbicides, however, the amount of leaching is likely to be slight.

PACLOBUTRAZOL

Paclobutrazol is a root-absorbed Class B gibberellin biosynthesis inhibitor that inhibits gibberellin and sterol biosynthesis, and hence the rate of cell division. It is taken up into the xylem through the roots and translocated to growing sub-apical meristems where it produces more compact plants and enhances flowering and fruiting.

Paclobutrazol inhibits gibberellin biosynthesis in the early stages of this pathway, which in turn prevents the synthesis of numerous gibberellins. Inhibition during the early stages of gibberellin biosynthesis can lead to increased injury when environmentally-stressed turfgrasses are treated with paclobutrazol. Additionally, turfgrasses may exhibit various morphological responses such as the widening of creeping bentgrass leaf blades.

Because paclobutrazol is root absorbed, about 8-10mm of irrigation or rainfall is required within 24 hours of application to move the material into the turfgrass rootzone. Once the paclobutrazol is watered in it attaches to soil carbon in the upper portion of the profile where the greatest congregation of *Poa annua* roots is likely to occur. Because healthy bentgrass roots are usually deeper than the *Poa annua* plants, the effects on the desirable species are less, which then gives it a competitive advantage over the *Poa annua*.

Paclobutrazol suppresses the growth of perennial biotypes of *Poa annua* in creeping bentgrass greens but does not necessarily kill the plant. Once the effects of the paclobutrazol wear off it is common to observe re-growth of the *Poa annua*.

ETHOFUMESATE

Ethofumesate is a selective, systemic herbicide absorbed by the emerging shoots (grasses) and roots (broad-leaved plants), with translocation to the foliage. It is not readily absorbed by leaves after the plant has generated a mature cuticle. Ethofumesate inhibits the growth of meristems, retards cellular division and limits formation of a waxy cuticle.

PRE-EMERGENCE HERBICIDES

Pre-emergence herbicides must be applied prior to weed seed germination and it is therefore important to understand the plant life-cycle and when germination is most likely to occur. The mode of action for most pre-emergence herbicides (e.g. bensulide, benefin, dithiopyr, oryzalin, pendimethalin, prodiamine) is the inhibition of certain phases of cell division during the seed germination process. As the weed seed germinates, the herbicide is absorbed by the root or shoots, cell division is blocked, growth is inhibited and eventually the immature seedling dies.

Emerged weeds visible at the time of application are generally not controlled by pre-emergence herbicides. However, dithiopyr, ethofumesate and pronamide are exceptions in that they can control the seedlings of some grassy weeds species.

Take Home Message Five

KNOW YOUR CHEMICALS AND HOW AND WHEN THEY SHOULD BE APPLIED AND UNDERSTAND WHERE THEY FIT INTO AN INTEGRATED PROGRAMME.

CONSEQUENCES OF *POA ANNUA* CONTROL

Whenever undertaking a weed control programme there is always the consequences to consider and the factors that influence the success or failure of the programme. The very premise of a weed control strategy is asking the question "what will be left once that weed is removed". Whether it is through herbicide applications, hand weeding or cultural techniques, there will be some changes to the playing surface, whether it is aesthetic change (e.g. colour), physical change (turf density, smoothness of surface etc) or both.

It is important that this is thought through and discussed with the golf club committee. It does not matter how well the consequences are explained, the reality often comes as a shock to the untrained. This is particularly the case where there is a relatively high proportion of *Poa annua* (e.g. greater than 15 per cent). Even hand weeding a relatively small population of plants and the short term surface disruption can be disconcerting to golfers.

Another factor to consider is the influence of various chemicals that may be used. For example, paclobutrazol is a growth retardant and it will suppress the growth of the bentgrass and this can have ramifications during periods of heat stress and disease where recovery from injury can be retarded.

Poa annua control through the application of endothal

The condition of the root system of the bentgrass is also a factor that impacts on the use of various herbicides. In areas that experience high summer stress which damages the root system, care needs to be taken using herbicides in the early autumn that can further damage the root system and/or retard the growth of the bentgrass. In particular, care needs to be taken with the use of the pre-emergent herbicides.

It may not be possible to start a *Poa annua* control programme from day one and in many situations greens can have a significant *Poa annua* population present before a control programme is implemented. If *Poa annua* control is considered to be feasible it is important to maintain the programme.

A common problem expressed was that various factors can disrupt the continuity of the programme. Preparation for tournaments (often involving increased fertility and water), disease outbreaks and renovations can upset the rate of success.

If an effective control programme is to be implemented it needs to be "whole of course" and this needs to be explained to the club, including the cost ramifications and how it will influence the outcome. Make sure you develop some agreed targets to aim for which will assist in objective evaluation of the programme's success, as well as develop the cost of achieving incremental increases in the level of control.

Most importantly, however, it is important to understand and to communicate that a sustainable *Poa* control programme does not work overnight. There will be some fluctuation in levels from season to season but a well-planned programme designed for your conditions should produce positive results in the long term.

Take Home Message Six

UNDERSTAND AND COMMUNICATE THE POSSIBLE CONSEQUENCES OF A POA ANNUA CONTROL PROGRAMME.

DR. YELVERTON'S COMMENTS

Dr. Fred Yelverton has been to Australia on several occasions and is acknowledged as a world expert on weeds in turf. Dr. Yelverton joined the discussion and a Q and A session and he made several useful points:

- In the USA about 80 per cent of *Poa annua* germination occurs in autumn during a 60 day window. The work of Dr. Mary Lush would indicate that in Australia the main flush of germination also occurs in the autumn with some germination occurring in the spring. However, the more perennial types can flower all year round with a major pulse in the late winter and spring.
- The pre-emergent herbicide bensulide is most effective if it is used from the early life of the green and is less effective once there is a well established *Poa annua* population.
- Dr. Yelverton has had experience with several new herbicide compounds. One of these is Bispyribac-sodium (Velocity™) which has been trialed in Australia. Dr. Yelverton indicated that it has had variable results in his trials.
- There are other new chemical compounds under trial including cumyluran and amicarbazone. Cumyluran takes about 12 months to have an effect on the *Poa annua* population and the amicarbazol provides good control, however, it does cause damage to the bentgrass depending on the time of the year and the cultivar (Penncross is more sensitive).

AGCSATECH RESEARCH

The AGCSA has been undertaking detailed research in using a life-cycle approach to the control of *Poa annua* using a combination of pre- and post-emergent herbicides, PGR and flower head inhibitors. There have been a number of key findings from this research which are summarised as follows:

- The *Poa annua* population is likely to vary from plants that are very dense, compact and fine leafed that have very limited lateral spread and no seed heads to a more open plant, with coarse leaves and numerous stolons that exhibit strong lateral spread and large numbers of seed heads.
- The different *Poa annua* types respond differently to different herbicides used.
- Herbicide treatments appear to select out the tolerant types and the diversity of the population can move over time, potentially making it more difficult to achieve control.
- The most effective programme involved the use of pre- and post-control herbicides and a seed head inhibitor.

CONCLUSIONS

Poa annua is undoubtedly the greatest of weed species and is a true opportunist in that if you give it the slightest chance to invade a turf area it will. Its genetic diversity, ability to seed prolifically at low cutting heights and for the population dynamics to alter with changing conditions makes it a formidable opponent. The *Poa annua* forum did not reveal any new magic bullets but it did reinforce the basics:

- Know your grasses and herbicides;
- Know your site conditions;
- Start your control programme early in the life of the green;
- For greatest success take a "whole of golf course approach";
- Use a combination of strategies - herbicides, nutrition, cultural etc;
- Be consistent;
- Understand the consequences of your strategy;
- Communicate; and
- Healthy, strong bentgrass equals optimum control.

Author's note: The *Poa annua* control strategies stated in this article are general in nature and are not meant to be implemented without careful thought and planning and taking into account local conditions.

MAKE US YOUR OFFICIAL EQUIPMENT SUPPLIER TOO

A golf course is no place to settle for second best. That's why John Deere Golf engineer products for every inch of your course. From tees and approaches, to roughs, bunkers and rolling greens - our products take course maintenance to the next level. We take you beyond precision course grooming with products that feature intuitive controls, safety and comfort features to keep your staff working longer and more efficiently.

It is because of this that John Deere is the Official Golf Course Equipment Supplier to the US PGA Tour. Couple this with the support of a dedicated, nationwide dealer network, factory trained service technicans, industry leading parts supply and attractive finance offers and it's easy to see how John Deere can be a partner to your course as well.

PGA TOUR

OFFICIAL GOLF COURSE EQUIPMENT SUPPLIER

PrecisionCut™ Fairway Mowers

C-Series Walk Behind Mowers

1200A Bunker Rake

Aercore 800 Walk Behind Aerator

2653B Trim & Surrounds Mower

2500E Hybrid Greens Mower

3245C Rough Mower

7400 TerrainCut™ Trim & Surrounds Mower

Nothing Runs Like A Deere™

www.JohnDeere.com.au

JOHN DEERE GOLF

Understanding how to get the most out of fungicide applications is important to help minimise disease damage

Understanding **fungicide** usage

In this instalment of Tech Talk AGCSATech senior agronomist Andrew Peart examines fungicides and how superintendents can maximise results through more effective applications.

During the summer months, bentgrass putting greens and other cool-season grass surfaces can be subjected to extreme temperature stresses and generally lower than ideal water availability. Therefore it is likely, even with the best possible management strategies in place, that disease outbreaks will occur.

Inevitably fungicide applications will play an integral part in sustaining acceptable turfgrass quality during these stressful periods. Understanding how to get the most out of fungicide applications is paramount in minimising the damage caused by diseases.

FUNGICIDE TYPES

There are two types of fungicides – contacts and penetrants. As the name suggests contact fungicides are applied to the leaf surface of the plant and do not penetrate the surface. Contact fungicides act by killing fungal spores or hyphae on the plant surface, but they cannot kill pathogens that have entered plant tissues. They tend to be very effective as a preventative fungicide but their effectiveness is determined by having a sufficient concentration present on the leaf surface.

The other limitation with contact fungicides is they only protect the foliage with which they made contact with and any new growth will therefore be unprotected, thus requiring very frequent applications in times of high disease pressure. Therefore, when it comes to applying contact fungicides the major requirement is to ensure thorough coverage of as much leaf area as possible and then to ensure the product has time to dry on the leaf.

Penetrant fungicides, on the other hand, have the ability to act within the plant, however, their movement within the plant can vary greatly among penetrant fungicides. The most limited movement occurs with those fungicides known as localised penetrants, such as iprodione. Acropetal penetrants are those fungicides that generally move upwards within the plant through the xylem and examples of these are azoxystrobin, propamocarb and propiconazole.

The set up of spraying equipment must also be able to deliver the correct amount of water to provide adequate coverage while minimising any possibility of drift

The only true systemic penetrant which has the ability to move both up and down in the xylem and phloem of the plant is fosetyl-Al. Often those fungicides referred to as systemics should actually be called penetrants as they, with the exception of fosetyl-Al, only move locally in the tissue they are absorbed by or through xylem and therefore do not move in both directions. Table 1 shows a more complete list of fungicides that are either contacts or penetrants.

When applying penetrant fungicides the overall leaf coverage does not need to be as uniform as contacts as the fungicide has some ability to move upwards within the plant, depending on its mobility. As a rule of thumb penetrant fungicides should be applied with generally more water than contacts.

RESISTANCE PROBABILITIES

A major decline in the effectiveness of a fungicide may be due to the disease trying to be controlled having developed a resistance to the active ingredient being applied. Contact fungicides are generally free from issues of resistance as the mode of action is not site specific, so there are several genetic barriers to the development of fungal biotypes resistant to them (Smiley et al., 2005).

Penetrant fungicides on the other hand are far more susceptible to resistance problems as they are generally very site specific. There is a high probability that within any fungal population there may be fungicide-tolerant biotypes present. A resistance can then occur if fungicides with the same mode of action are continually used which will kill the non-tolerant biotypes of that population. However, there are likely to be resistant biotypes present that will eventually dominate.

FUNGICIDE INTERACTIONS

Sometimes turf managers will mix two or more fungicides together. This can have benefits in increasing the spectrum of control, savings on labour costs, reducing wear and tear on machinery, reducing water requirements in having to fill the spray tank multiple times, as well as hopefully gaining an improved control than either product would give if applied separately.

The phenomenon of gaining an improved response, than if two products were applied separately, is known as a synergistic response.

This can be shown simply by a mathematical equation as 1 + 1 = 3. Couch (1995) reported that for the control of pythium blight the following fungicide combinations provide a synergistic response:

- Mancozeb + Metalaxyl
- Mancozeb + Propamocarb
- Fosetyl Al + Propamocarb
- Foestyl Al + Metalaxyl

The far more common effect of mixing fungicides will give a response known as an additive response where the mixing of two fungicides provides the same response as if you applied both chemicals individually (1 + 1 = 2). This obviously has the benefits of reducing application time, possibly increasing the spectrum and length of control while having no negative effects.

Unfortunately, mixing or combining chemicals can have a negative effect which is known as antagonism (1 + 1 = 1). Not only is there a loss in pesticide activity that results in reduced control there may also be a phytotoxicity observed on the turf or blockages of spraying equipment as a result of either chemical or physical incompatibility.

INCOMPATIBILITY

Two or more fungicides, or a fungicide and fertiliser, are compatible if no adverse reaction occurs after the two are mixed together. Compatibility can firstly be seen as a physical response where two substances either separate, such as an oil and water (polar vs. non-polar), or cause precipitates to form.

The second type of incompatibility is known as a chemical incompatibility which is usually harder to identify but is generally represented by an increase in temperature of the resultant mix and the deactivation of one of the active ingredients.

Mixing fungicides that are not well documented needs to be done with caution to prevent either plant phytotoxicity or clogging of sprayer equipment. The best way to identify possible incompatibilities between fungicides or fungicides and other substances is to conduct what is known as a jar test.

A jar test is simply a representative sample of the desired mixture undertaken before it is formulated in the tank. It simply involves adding a similar proportion of each chemical (usually no more than a teaspoon equivalent) into a jar (bottle, somewhere around 1 litre) of water. The chemicals need to be added to the jar in the same sequence as prescribed on the label. If no direction is provided, the general rule of thumb for mixing different formulations is: wettable powders, dry flowables, liquid flowables, microencapsulated, emulsifiable concentrates then solubles.

Once the chemicals are added give the solution a good shake and allow to rest for 2-3 minutes. In that time observe the mixture for separation (settling out), formation of precipitates or a change in the temperature of the solution. If none of these occur then the mixture should be compatible. Before any broad scale application is conducted a small test area is recommended only to be sprayed so the effect of the tank mixture can be assessed for phytotoxicity.

WATER QUALITY

One of the major reasons for a poor response from fungicide applications may be to do with the quality of the water they are applied with. Along with reduced effectiveness, using poor quality water can also damage spray equipment and increase wear and tear.

Poor quality water refers to parameters such as pH, hardness, salinity and suspended solids. Rainfall tends to be the best quality water used for spray applications but sometimes alternative water sources such as town water or even bore water are used. The quality of any water source should be known prior to utilising it as a source for fungicide applications.

The major issue associated with the pH of the water is alkaline hydrolysis. Alkaline hydrolysis is an irreversible chemical reaction in which the hydroxyl ions in the water interact with the fungicide in such a manner as to break it down into a non-toxic compound (Couch, 1995). Generally the higher the pH of the water and the longer the spray solution is in the tank the greater the loss in the activity of the fungicide, depending on its susceptibility to alkaline hydrolysis. The best way to avoid the likelihood of alkaline hydrolysis if the water has an alkaline pH is to add a buffering agent to the spray tank.

Dirty water can also be particularly detrimental as the suspended solids within the water may cause physical limitations such as blocking or increasing wear on nozzles as well as chemical limitations where the particles are absorbed and bind to the chemical's active ingredient to reduce its effectiveness.

CONCLUSION

While fungicides are an integral part of any management programme, using them efficiently will obviously provide the best result. This starts from having the disease correctly identified to find the most appropriate fungicide for control.

Once a fungicide or fungicides have been chosen or recommended it is important to read the label and ensure all directions are correctly followed, not only in terms of the recommended application rate but also any other requirements such as adjuvants, PPE requirements and cleaning instructions.

The set up of spraying equipment must also be able to deliver the correct amount of water to provide adequate coverage while minimising any possibility of drift. Lastly, the quality of the water you are using to spray out the fungicide must not inhibit the activity of the fungicide and the weather conditions must be conducive to allow effective control.

REFERENCES

Couch, H.B. 1995. *Diseases of Turfgrasses. 3rd Ed. Krieger Publishing.*

Smiley, R.W., Dernoeden. P.H. & Clarke, B.B. 2005*. Compendium of Turfgrass Diseases 3rd Ed. American Phytopathological Society.*

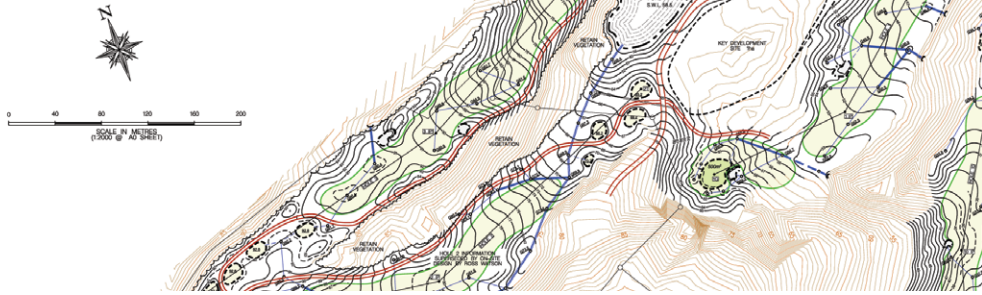
TABLE 1. FUNGICIDES USED ON TURFGRASS (ADAPTED FROM SMILEY ET AL. 2005)

Common Name	Chemical Class	Contact (C) or Penetrant (P)[a]
Azoxystrobin	Strobilurin (Q_o inhibitor)[b]	P
Chlorothalonil	Nitrile	C
Ethazol, etridiazole	Aromatic hydrocarbon	C
Fenarimol	Pyrimidine	P
Fosetyl-aluminium	Ethyl phosphonate	P[c]
Iprodione	Dicarboximide	P
Mancozeb	Ethylenebis-dithiocarbamate	C
Propamocarb	Carbamate	P
Propiconazole	Triazole	P
Quintozene	Aromatic hydrocarbon	C
Thiram	Dialkyl dithiocarbamate	C

[a] A contact fungicide is active only on leaf and sheath surfaces. A penetrant fungicide is absorbed by plant tissues and can be active both on the outer surface and inside plant tissues

[b] Quinol-oxidizing site (Q_o) inhibitor

[c] Fosetyl-aluminium is a true systemic, translocated throughout the plant



The Pulse

Golf course architects have a significant influence on the way golf courses are ultimately presented and maintained. In this edition The Pulse asks five Australian course designers how much consideration they give to course maintenance during the design phase of a new facility and enquires what maintenance practices over time have shaped the way they approach the design of a new course. They were also asked to provide their thoughts on current day golf course maintenance practices and what one practice they would like to see changed.

TONY CASHMORE
Cashmore Golf Design

As an architect for buildings and golf courses, I have often said that greater satisfaction comes from the latter. Unlike buildings, a correctly designed and constructed golf course becomes more and more valuable, better finished and beautiful because of the intense care and intrinsic ongoing redevelopment that proper maintenance practices give to it.

Any good designer knows this and watching down the years how our courses are managed by superintendents gives us experience of how to design for different terrains, soil types, drainage requirements, increased responses to environmental matters and the ever-greater emphasis on reducing water usage. We listen to those superintendents. I like to have clients engage a superintendent during construction. For them to review slopes, select different grass types which suit the conditions through the year and which might best give the course character I desire…all this in the context of what is going to be the traffic over the course and proposed maintenance budgets. A good, experienced superintendent is therefore vital in tailoring a long-lasting golf course.

The question of how advancing maintenance practices change the approach to design is tied into the above. In essence, we all should think positively about the new opportunities today's maintenance knowledge and methods give to designers – in irrigation techniques and controls, in new ways of producing greens and tees which resist deterioration, in saving and ameliorating water, in developing habitat values in non-play areas and in the development of turf consistent for play all year round. Let us not be negative about today's strictures on water and chemical types and application rates, but rather let's work to make the next course more natural and maintained with less intense effort.

MIKE COOPER
Mike Cooper Golf Design

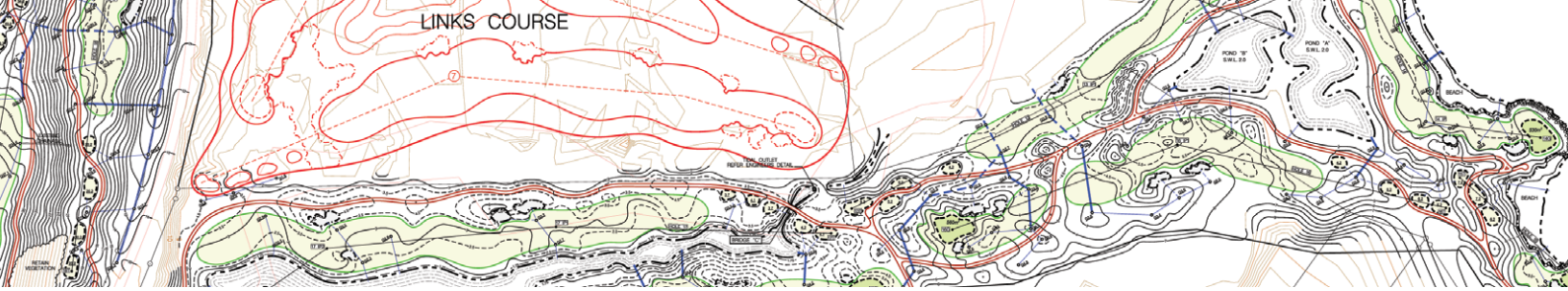
How much consideration is given to course maintenance when designing a new course? The answer is related to the instructions given by the client to the architect, which are themselves related to the perceived golfing needs of future users. There is usually a vast difference from a hard-nosed real estate developer looking for land value betterment, to an emotionally charged client who often has access to four times the quantum of funding.

Improved mowing machinery, fertilisers and chemicals, irrigation systems and turf species have all impacted on the layout and style of new courses and these changes need to be considered on a site by site basis. In particular, more stringent controls on water for irrigation will force course layouts to restrict the areas of high maintenance turf and this in turn will promote more use of native grasses and shrubs. Course designers will be looking to superintendents more than ever to develop maintenance techniques for hardy species, which will still allow golf balls to be found without undue delay. In short, future maintenance techniques (and their costs) will play an ever-increasing role up front in design considerations. Add more frequent use of flood prone land for golf courses and you have a scenario requiring continuing innovative ideas from the turfgrass management industry.

Superintendents are using modern maintenance techniques in a very responsible way. I would expect them to respond to the new pressures dictated by climate change and global warming, not to mention tougher financial times - in the same way that they have overcome past problems - in a practical and efficient way. Don't change any existing practices - just keep adjusting and improving them, as dictated by soils, climate, available funds and golfing needs.

AGCSA Best Practice SERVICE

AGCSA advice for
to improve



NEIL CRAFTER
Golf Strategies

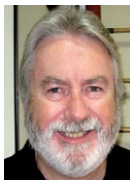
The consideration of how a new course is to be maintained is an integral part of the design process. In the initial design brief it is vital to have a good understanding of the type of course and maintenance standards envisaged.

Superintendents I work with say bunker maintenance is a very time consuming component. Simple, easy to maintain bunkers are often bland and boring to look at and so a trade-off is necessary in the design of these hazards in order to achieve a balance between maintenance complexity and visual/playing interest. Similarly with contours, while steep contouring may be dramatic, such areas still need to be mown without risking life and limb.

The history of golf design shows that architecture and course maintenance has developed in a symbiotic manner. Dr Mackenzie always emphasised 'economy' and 'finality' in both design and maintenance practices. The installation of irrigation systems from the 1920s onwards certainly had an impact on fairway widths, with many becoming narrower over time. This led to an emphasis by architects in bunker placement at the sides of the fairways, with the centreline hazard, like those on The Old Course, becoming a thing of the past. In recent years a new generation of architects has re-learnt the lessons of the past masters and fairway widths have increased and centreline hazards re-introduced.

I am impressed by the dedication of superintendents and maintenance practices are now more refined and scientific than when I first played the game in the 1960s. The thing I do miss most is the sense of seasonal difference in the way courses played from summer to winter. Back then 'head greenkeepers' were more likely to allow fairways to brown off a little and play hard and fast, quite a distinct contrast to winter conditions.

PHIL RYAN
Pacific Coast Design



As golf architects, there are site specific issues that need to be addressed when developing a golf course, but in all cases there are some fundamentals - the environment on and surrounding the site, the target market and course strategy, water for irrigation, drainage strategy and an ongoing management strategy.

The latter is vital for the client as it defines likely profitability through the golf course expenditure and income which in turn is inter-dependent on design, construction quality, infrastructure, selection of grasses and maintenance regimes. As per the preceding statement, ongoing maintenance is affected by these other inter-dependent items and as such we spend a lot of time setting the parameters and standards for the golf course.

Design contouring of the golf course and feature placement are important to ongoing maintenance. With respect to contouring, where possible we try to design to allow for modern turf maintenance equipment to operate safely and efficiently. Feature placement (bunkers and greens) is another aspect that has a direct affect on maintenance as walk off areas from greens, for instance, are a constant issue for superintendents.

Course construction specifications are the most important part of this issue as they set all standards for infrastructure. Most superintendents know that it is what is (or is not) under the ground that has a dramatic effect on their ability to produce a good turf surface. Investment in good infrastructure in a new course allows for good turf maintenance.

Having been fortunate enough to have played golf in many different parts of the world, I feel that Australian golf course maintenance generally is in a good place, balancing that natural approach to maintenance with production of excellent primary surfaces.

JUSTIN TROTT
Thomson Perrett

Three current projects illustrate the extent and impact of future maintenance requirements on course design. At the redeveloped Ballarat Golf Club the irrigation system was a major factor in fairway design. Here large expanses of irrigated turf which were not realistically in play were removed and returned to native vegetation. Bunker areas were assessed on annual sand quantities required for top up and accessibility of bunker rakes.

Dent Island Golf Course (Hamilton Island) presented more complex design challenges. Here the rugged topography and dramatic elevation changes see some holes falling in excess of 40m from tee to fairway. Some severe slopes required extensive bulk earthworks, site moulding and shaping to ensure mowable surfaces. Bunker sand on the island was at a premium, therefore bunker shapes were kept to a minimum and placed primarily for strategy.

At Sandhurst Club in Victoria water sensitive urban design is a modern day tool used by designers to take advantage of water run-off from abutting residential communities. The inclusion of wetlands and stripping ponds not only enhance the landscape but provide an important storm water cleaning function while helping to meet discharge standards. Water harvesting also effectively works to reduce both irrigation and course drainage costs.

Overall, Australian golf course maintenance is in good shape mainly due to the expertise of superintendents. This is partly borne from the sharing of experiences in a vast range of locations. I'd like to see the itch for achieving high stimp readings on greens by excessive rolling and low cutting be done away with. Green design, by its nature, invariably involves a slope which provides putting complexity. To compound the difficulty in this manner only helps deny the original green design intent.

superintendents and clubs golf course maintenance practices

Family first as Porter steps aside at Royal Melbourne

Jim Porter

After nearly 20 years at Royal Melbourne Golf Club, Jim Porter recently made one of the toughest decisions of his life and tendered his resignation as course superintendent. ATM editor Brett Robinson catches up with Porter to reflect on an announcement which came out of the blue.

The need to spend more time with his young family is the prime motivation behind Jim Porter's shock decision to step down as course superintendent at Melbourne's famous Royal Melbourne Golf Club. Porter, 48, floored the Australian golf course maintenance industry in late January when he announced, just shy of notching up 20 years' service at the sandbelt icon, that he had tendered his resignation as superintendent and would finish up on 31 March 2009.

As well as causing shockwaves among the Australian turf industry, the news of Porter's resignation quickly found its way into the pages of Melbourne's The Age newspaper and golf websites around the globe. Royal Melbourne chief executive Paul Rak officially posted an advertisement for a new course superintendent on the AGCSA's website a few days later and in the first day of appearing online attracted over 400 individual hits.

Porter's resignation came in the same week that the club was also granted a special water exemption to assist in preparations for the 2011 President's Cup. That exemption, which falls under the Victorian Government's Drought Response Plan, will enable the club to use 70 megalitres of additional potable water per year in order to get the Composite Course (comprised of 12 holes from the West Course and six from the East Course) ready for the prestigious tournament.

Speaking to Australian Turfgrass Management a week after he broke the news to his shocked assistants and maintenance crew at their Thursday staff meeting, Porter says that some soul searching over Christmas ultimately led to his decision, one which he has made with wife Narelle and daughters Erin (7) and Sophie (5) foremost in his mind.

"When the President's Cup was announced last year I was asked what my intentions were," says Porter. "At that stage I wanted to stick around until the tournament and then maybe for another 2-3 years after before starting to ease off. But things have changed in the last year or so.

"The last three years have been very time-consuming with the drought and all the other issues that have come with it. I had a very nice three-week break up at Bright over Christmas and I did a bit reflecting. I asked myself whether I wanted to do another President's Cup – I've already done one – but more so I was acutely aware that my family had often come second a lot of the time in recent years.

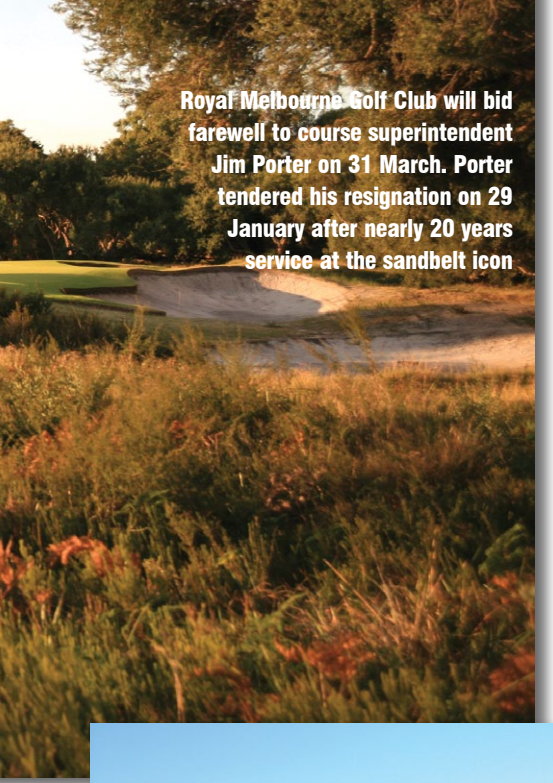
"Whether it was coming into work on Saturdays and Sundays, setting up irrigation, counting water usage for the past few years, the job had become all encompassing. Over the past 12 months every time I went to pick the car keys off the microwave Erin and Sophie would say 'Oh daddy, you're not going to work again are you?' Even if I went down the road to get the paper they would ask whether I was off to work. Eventually, that hits home at you.

"I've been at Royal Melbourne nearly 20 years and I'm now at the stage of my life where I need to give something back to my family and do something that enables me to organise my life around them rather than them around my work. I guess I just want to live a bit more of a normal life, one which I have a little more control of and not one that is dictated so much by the weather!"

Porter says his timing is also right in terms of the golf club and its future. Overseeing maintenance operations during what has arguably been some of club's toughest times, Porter believes now is an ideal time to hand over the reigns a couple of years out from the President's Cup and now also that the course is on the improve after being ravaged by severe drought.

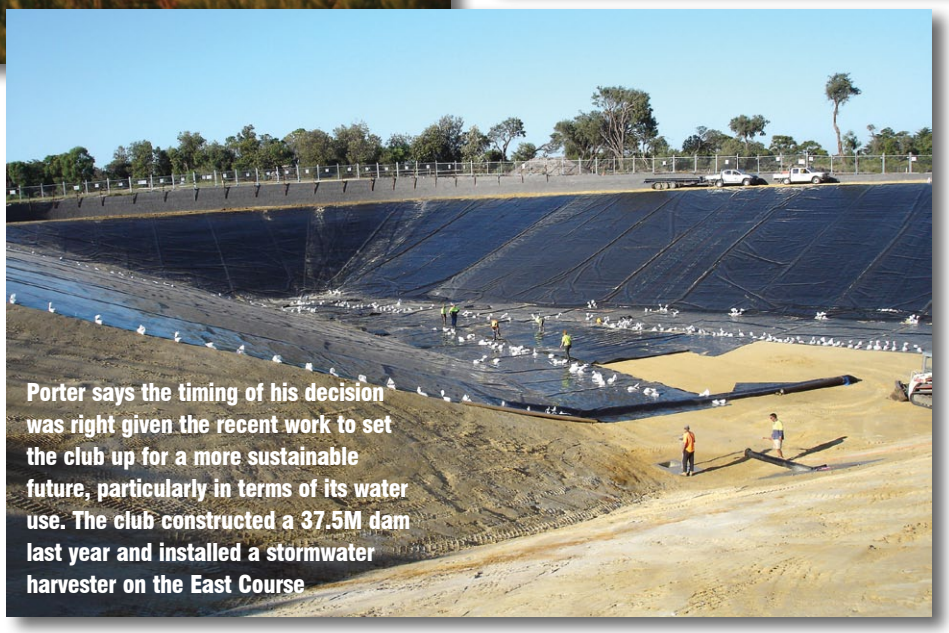
"I feel happier about doing it (resigning) now than say a few years ago because we've got things in place that mean the course is on the improve," says Porter. "We've got a bit more water with the new lagoon and storm water harvesting system and the fairways are getting back to where they should be. We've come a long way in the last four to five months and I can really see that the club is going to get to where it wants to be in the next couple of years after what has been a pretty difficult period. There's still a long way to go, but there is light at the end of the tunnel."

Porter admits that the thought of leaving Royal Melbourne had crossed his mind in the past couple of years, but never seriously considered it. He is also quick to quash the



Royal Melbourne Golf Club will bid farewell to course superintendent Jim Porter on 31 March. Porter tendered his resignation on 29 January after nearly 20 years service at the sandbelt icon

Porter says the thing he will miss most is the natural beauty of Royal Melbourne



Porter says the timing of his decision was right given the recent work to set the club up for a more sustainable future, particularly in terms of its water use. The club constructed a 37.5M dam last year and installed a stormwater harvester on the East Course

notion that job satisfaction had an influence in his decision to resign.

"If that was the case I would have pulled the pin a few years ago," laughs Porter. "I am extremely passionate about my job and the turf industry, but it really was more the case I needed a break so I can spend some time with my family. I don't think it's a midlife crisis, but it's a perfect time to evaluate what I'm going to be doing for the next 10-15 years.

"I wouldn't have stuck with it for the past three or four years if I didn't have the passion or had lost the keenness or enthusiasm. The job has changed dramatically and there are a lot of new pressures than when I started. Every superintendent is under pressure but I guess being superintendent of Royal Melbourne has lots of different pressures. But it's more the lifestyle of being a superintendent.

"It doesn't matter whether you the superintendent here or at a small country course, if you're dedicated and passionate about the job it requires a huge time commitment. I'm lucky to have had the resources and I think I have been able to manage pretty well, but the kids are now at the age where they notice things a bit more and while they haven't directly told me so they are questioning things more.

"It was an extremely hard decision to make, but it was one that was made around what I thought is best for my family and myself and I feel good about that. I'm not saying I don't want to be a superintendent anywhere else, but I certainly don't think I'll be looking for a position at a club of similar ilk to Royal Melbourne."

The hunt now begins in earnest for Royal Melbourne which farewells just its fourth superintendent in over 100 years. Porter joined the Black Rock course in 1989 replacing superintendent Peter Williams after spending the previous two years as superintendent at Metropolitan Golf Club.

During his time Porter has seen the conversion of all greens to the new Suttons mix, a tee resurfacing programme as well as major changes to five holes on the East Course due to ball encroachment and safety issues. Perhaps the biggest and most significant works project has been the ongoing stormwater harvesting project to reduce the club's reliance on potable water. Last year the club finished construction of a 37.5 megalitre dam adjacent to the maintenance shed which is fed by a 1.8km pipe that hooks into a stormwater diversion structure located alongside the 7th East hole.

Porter has also showcased the MacKenzie course to the world, preparing the Composite Course for the 1998 President's Cup, the first time the tournament had been Down Under, as well as four consecutive Heineken Classics from 2002-2005.

"Sometimes you sit back and reflect on what you have done and we have achieved a hell of a lot," says Porter. "We've probably been limited with what we could do in the last three years, but prior to that we have done a lot in terms of greens and tee replacement and construction. Also, maintenance of a 36-hole golf course of the scope and scale of this place is pretty time-consuming.

"I've been fortunate to prepare the course for 12 major tournaments, including the Presidents Cup which was one of my real highlights. I guess we have treaded water in the last couple of years and in some areas we have gone backwards, but over the journey there have been some major improvements.

"The thing I will miss most is the natural beauty of Royal Melbourne, that's the most pleasurable thing and still is about working here, even if there isn't much grass on the fairways."

Rod Riley, OAM (1937-2008)

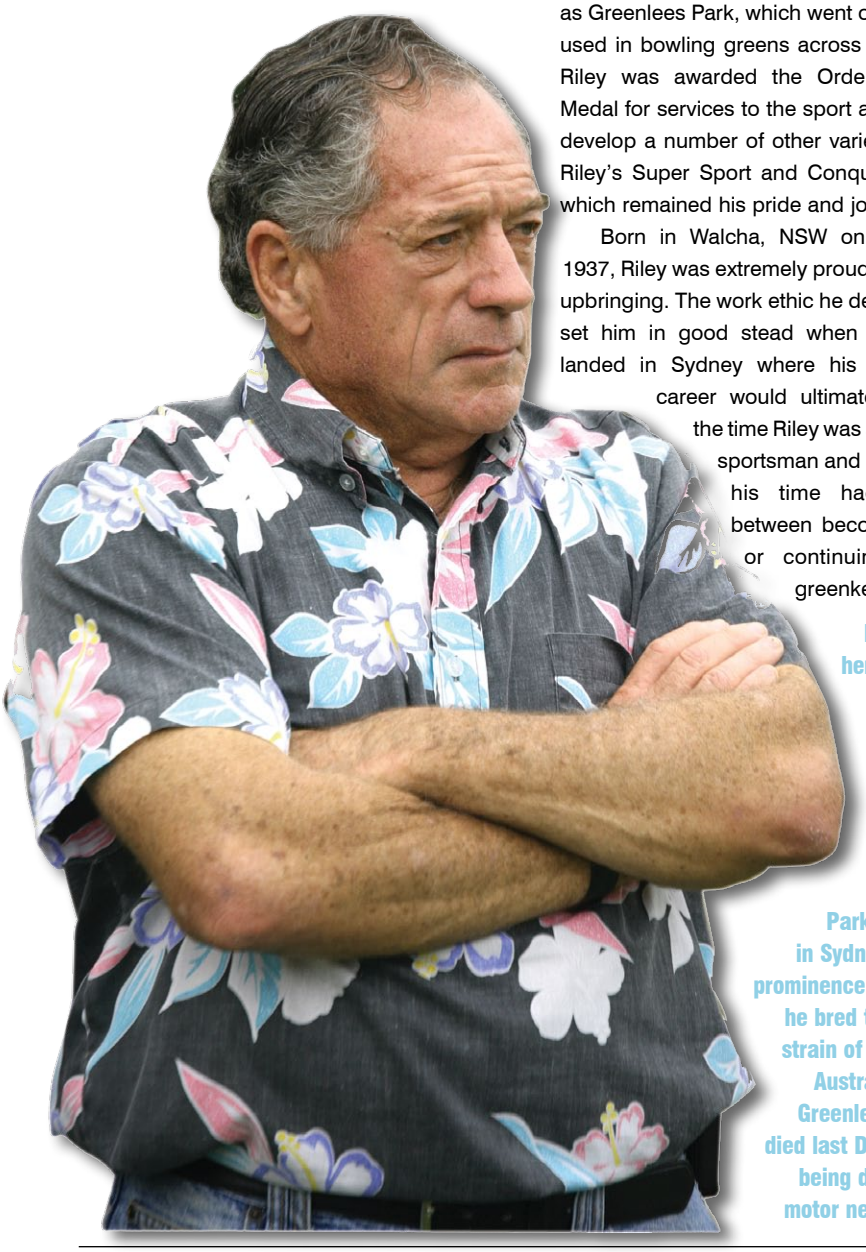
Last December the Australian turf industry lost one of its pioneers with the passing of Rod Riley, OAM. With the help of those who knew Rod best – Bob Jefferies, Peter McMaugh and Gary Beehag – ATM pays tribute to a friend and colleague who helped revolutionise the Australian turf industry through his contributions.

December 4, 2008 will be remembered as a day when the Australian turfgrass industry bid farewell to one of its most influential souls with the death of esteemed turf breeder and distinguished greenkeeper Rod Riley.

Riley, who was 71, died after being diagnosed with Motor Neurone Disease shortly after the 2008 Australian Turfgrass Conference and Trade Exhibition in Melbourne. Riley was farewelled on 8 December at Castlebrook Crematorium in Rouse Hill, NSW with hundreds of turf industry friends and colleagues there to pay their respects. He is survived by wife Maureen, daughter Joanna and two grandchildren.

Riley was former greenkeeper at Greenlees Park Bowling Club in Sydney and rose to prominence in 1965 when he bred the first single strain of couchgrass in Australia, known as Greenlees Park, which went on to be widely used in bowling greens across NSW. In 1992 Riley was awarded the Order of Australia Medal for services to the sport and went on to develop a number of other varieties including Riley's Super Sport and Conquest, the latter which remained his pride and joy to the end.

Born in Walcha, NSW on 1 November 1937, Riley was extremely proud of his country upbringing. The work ethic he developed there set him in good stead when he eventually landed in Sydney where his greenkeeping career would ultimately unfold. At the time Riley was an exceptional sportsman and on completing his time had to decide between becoming a golfer or continuing on as a greenkeeper.



Riley, pictured here at the 2007 Australian Turfgrass Conference in Cairns, was former greenkeeper at Greenlees Park Bowling Club in Sydney and rose to prominence in 1965 when he bred the first single strain of couchgrass in Australia, known as Greenlees Park. Riley died last December after being diagnosed with motor neurone disease

Riley played rugby for Randwick Sydney and only just missed selection in the Australian Davis Cup tennis squad, but it was after a discussion with a wise uncle that he eventually chose the greenkeeping path. He specialised in bowling greens and it was at Greenlees Park where he made a find that changed his life forever. As well as developing Greenlees Park, Riley also revolutionised the art of bowling greenkeeping and many of the practices commonplace today can be attributed to Riley's pioneering efforts.

Riley continued to breed couchgrasses and right to the very end was still looking for the next winner. He sold all his Plant Breeder's Rights (PBR) titles and turfgrass operations together with all licenses and research prior to his death to ensure his life's work continued on in the way he wanted.

PETER MCMAUGH
TURFGRASS SCIENTIFIC SERVICES

I first met Rod Riley in January 1965 when he was getting over the ravishing of his three greens caused by a very wet Australian Bowls Championship conducted at Greenlees Park Bowling Club. I was 29 years old and completely new to the world of turf. Rod was 27 and a veteran bowling greenkeeper of such quality and renown that his club was selected for the national championships.

Rod began his greenkeeping career at The Lakes Golf Club and he could just as easily have been a professional golfer for he was an exceptional sportsman in any game he played, including rugby and especially tennis. He played off with Roy Emerson for a place in the Australian Davis Cup squad.

Rod was a thinking greenskeeper and he served his bowling green time at Rockdale Bowling Club with a noted greenkeeper of the day, Mick Goldstein. He went from there to Sutherland Bowling Club and then to Greenlees Park. It was at Greenlees Park that I assisted Rod in the selection and development of Greenlees Park couch.

I very strongly promoted Greenlees Park couch as the single strain grass which was to revolutionise the quality of bowling green surfaces in Australia. Unfortunately for Rod the time of PBR grasses was a long way away in 1965 and his pioneering contribution was recognised not by money but by kudos.

Such was Rod's success that he was eagerly sought out by other clubs to either turn over their surfaces or, at a later date,

to manage many of them under contract. This inevitably brought conflict with the AWU-aligned Bowling Greenkeepers Association.

Rod and his great late friend, Terry Head, were superior greenskeepers and great supporters of the Australian Turfgrass Research Institute (ATRI) which I had set up and ran for 14 years. The fact that Greenlees Park was just a few kilometres away meant that a lot of trial work and development work at the Institute was worked out with Rod. He eventually moved on from Greenlees Park and was located for many years at Rydalmere Bowling Club and also at Homebush and St John's Park, Cabramatta.

Rod's development of Riley's Super Sport (known as Celebration in the USA) led him to a business association with Terry Allen, formerly of Windsor Turf, who pioneered the marketing of his Conquest couch selection.

Rod was always generous in his knowledge and in his sharing of it and trained many capable assistants. His great contributions to improving turf varieties have been something for which the world of sports turf should be eternally grateful. At his funeral Bob Jefferies described me as Rod's 'sparring partner'. We may have sparred a bit in print but we were the firmest of friends with a deep mutual respect.

GARY W. BEEHAG
M. COLLINS & SONS

The decision by Rod to turn down an opportunity in professional golf to pursue greenkeeping, initially in golf, is one that the entire Australian sportsturf industry owes a great deal. The name Rod Riley will always remain synonymous with the common couchgrass at the bowling club in Sydney of the same name and which launched and underpinned his professional career as a skilled, passionate and observant greenkeeper.

For his dedication to the bowling green industry, Rod was awarded an Order of Australia Medal in 1992. Committee members of the Greenlees Park Bowling Club asked me and Peter McMaugh to endorse their nomination of Rod for the award, which we both strongly agreed and attended a meeting at the club to express our support.

My first introduction to Rod was during my early years at ATRI during the mid-1980s. I consider myself fortunate for having Rod divulge the origin and history about all of his commercialised couchgrass varieties and still have the handwritten letter from Rod.

The 1960s in Sydney was a period when lawn bowls was starting to experience a boom in memberships and new clubs. What they so badly lacked was what Rod was able to observe and deliver – a new and highly tolerant couchgrass.

While a number of other common couchgrasses were later selected for bowls by several bowling greenkeepers in country NSW, few still exist and none have remained as widely accepted as the variety selected by Rod back in 1965. Rod's selected variety, the first single-strain couchgrass, remains on the green which was first grassed at the bowling club to this day.

While he never truly gained financially for all his efforts and time, Rod realised the benefits of developing improved couchgrass varieties and began capitalising on his practical experience and knowledge to develop further selections for many sportsturf applications. Some of Rod's couchgrass selections have found their way overseas.

As they say, the rest is history. The Australian sportsturf industry owes a great debt of gratitude to Rod Riley for bringing the attention of so many to the benefits of seeking and developing improved couchgrasses to the point where Australia does prepare the world's best lawn bowling greens and has developed some of the world's best couch varieties.

The RS48-11C Packed with features, not weight

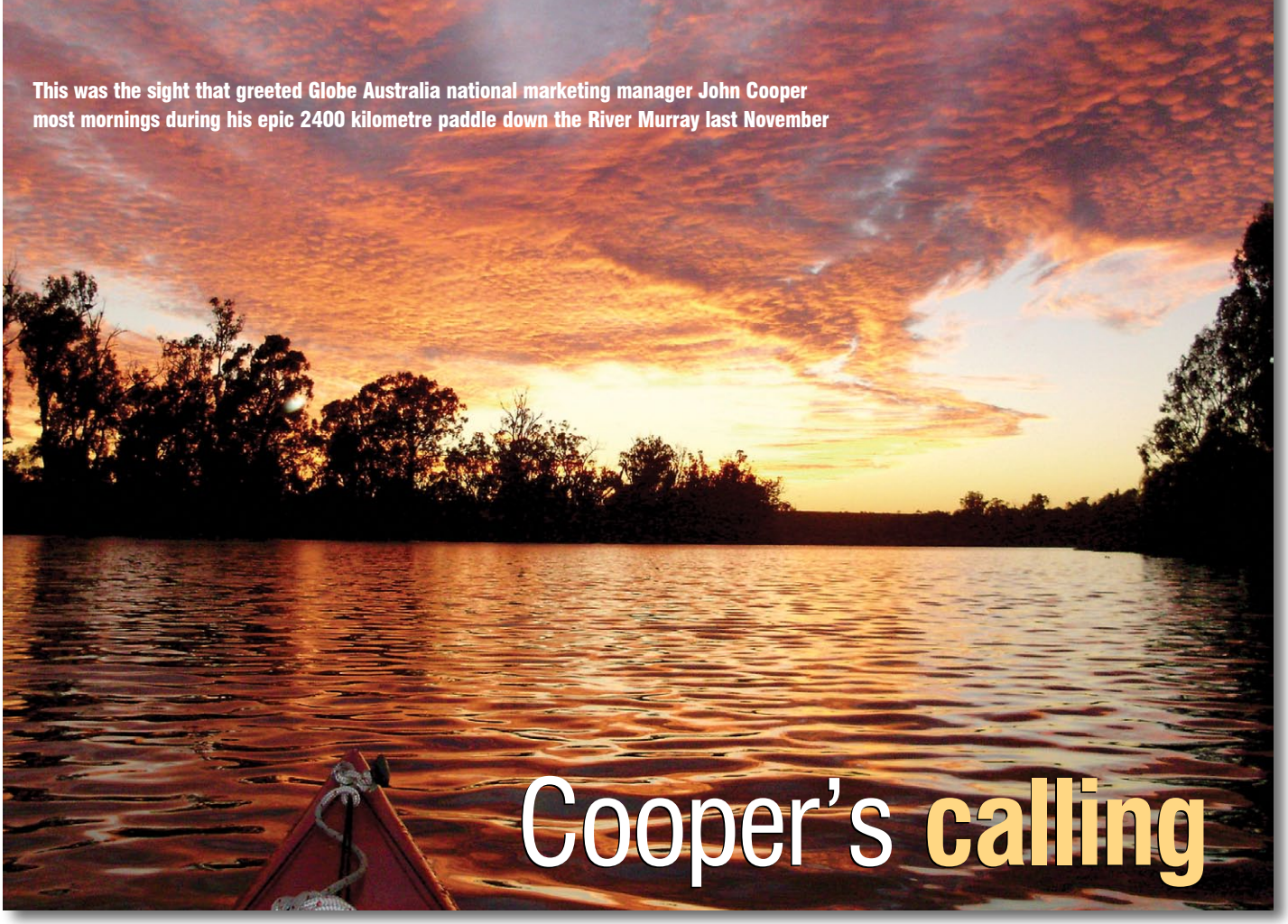
The only roller in the world to have the patented triple offset smoothing roller configuration

The flagship RS48-11C Roll 'n' Spike Golf Greens Roller by Tru-Turf is the culmination of 60 years design and development in the art of turf rolling. Our triple offset smoothing configuration allows this engineered product to smooth the turf by skilful design, not by weight.

The RS48-11C is designed to roll your greens in any direction without line creasing. With a rolling swath of 1200mm (48"), a split smoothing head, finger-light steering, and the patented triple offset smoothing rollers, it is the only roller that produces the quality of surface finished desired, without compacting the green.

TRU-TURF

t. 07 5594 7199
e. sales@truturf.com
f. 07 5571 5493
w. www.truturf.com



This was the sight that greeted Globe Australia national marketing manager John Cooper most mornings during his epic 2400 kilometre paddle down the River Murray last November

Cooper's calling

Last November and December Globe Australia national marketing manager John Cooper took it upon himself to put his mind and body through the wringer in order to knock off a lifelong personal challenge to paddle the length of Australia's mighty River Murray. Starting near Towong and travelling over 2400 kilometres downstream to Goolwa, Cooper reflects on his 46-day adventure which not only opened his eyes to the plight of one of Australia's great waterways but one that ultimately gave him a better insight into himself.

From the Victorian Alps to the great Southern Ocean, over 2400 kilometres covered in 46 days, almost as many nights spent in a tent and fuelled by just as many cans of baked beans. Was I crazy? Some may say so. Many did. But no, it was a personal challenge that had to be done.

For years as a businessman I had written newsletters and given talks to staff on the need to plan and set goals to achieve life's aims. In my efforts to be some sort of mentor over these years, I have always made it a priority of mine to train and motivate staff, not just to benefit the organisation but to see them achieve the best for themselves. But a bit like raising children, the words I wrote and the words I spoke did not necessarily apply to me, something you expect of others but somehow you seem exempt from your own ideals.

I often used my own experiences and examples to relate to the message I was delivering and often this would be a lifelong challenge of mine to paddle the entire length of the River Murray. Having made reference to it over many years and in particular to my turf industry clients along the river, I had put myself in a position where I could no longer back away. The excuses of leaving it until I retired or until there was more water had literally dried up. So 2008 was the year and November was to be the month.

I have always set myself personal goals, whether it was running from work to home or stopping on a drive and walking to the top of some hill that took my fancy. I have always been keen about being fit and when the bones got too old for running, kayaking was a logical progression as it was much softer on the body.

Living in Adelaide, where I used to own a turf and pest control business for more than 20 years, I would sometimes go up the Coorong or get dropped off up the Murray and ring my wife Jenny to pick me up a few days later. I would call myself a recreational kayaker and over the years I have paddled the length of many much smaller rivers like the Noosa, Brisbane, Maroochy, Clarence and Glenelg.

The Murray, however, was an entirely different proposition. For a close to 60-year-old overweight businessman I knew a bit of conditioning was required before throwing myself at the mercy of Australia's most iconic river. I gained this by cycling the hills around Adelaide and Brisbane and my programme was fairly simple – ride so I felt wiped out to get the body used to recovery and then do it all over again.

I also became well known between the islands of Moreton Bay, being the lone kayaker

Calling himself a recreational kayaker, Cooper harboured a lifelong challenge to paddle the length of the Murray

Cooper's journey took 46 days and each night he would set up camp on the banks of the river

miles from anywhere, and a normal weekend would see me navigate my way from Cleveland to the Gold Coast. On one occasion, however, I got a little more than I bargained for. Camping the night on Peel Island on my way to North Stradbroke, the wind picked up to the extent that I couldn't get off the island the following morning. The local coastguard had to come and collect me and even then the kayak nearly sunk as I battled my way out to the rescue craft!

AN ICON IN TROUBLE

Why kayak the River Murray? It's no surprise that many people have done it! In fact the very first travel on these waters by the Aborigines was by canoe. The River Murray is a predominant feature of the landscape and is the longest river in Australia, snaking its way from the Victorian Alps, running the breadth of three states before spilling into the Southern Ocean near Goolwa. It is the world's 16th longest river at 2530km and is the third longest navigable river in the world after the Nile and Amazon.

The River Murray was first discovered by European explorers Hamilton H. Hume and William H. Hovell in 1824. It wasn't until five years later, however, that Charles Sturt navigated down the Murrumbidgee River to encounter the Murray and named it after Sir George Murray, a soldier and Tory Party politician, when his exploration party encountered the Darling connection. Sturt had previously explored the Darling River to the north and was able to determine that they were the same river system.

The Murray provided an easy travel route through much of the country and in the early days a network of steamers and barges moved produce such as wheat, wool and timber. In the mid-1800s when roads and railways were constructed the distances were more direct than the winding river provided. On my journey I would often look over a bank to see the river I had passed an hour earlier. Nowadays of course the commercial vessels have been replaced by recreational craft and the river has become a popular playground for the many local communities along the river as well as holidaymakers. ▶

Cooper's paddling gloves just one week into his journey

Another fine feed of baked beans hits the spot

Cooper's journey opened his eyes to the plight of the River Murray in particular the water quality and lack of flow downstream from Mildura.

Being in one of Australia's most unique and picturesque environments gave Cooper the opportunity to reflect on a lot of things, including his personal and business life

Forty six days after his adventure started upstream near Towong, an emotional Cooper steps ashore at Goolwa

The Murray is a hugely important resource in providing water to the towns and agricultural crops along its route, including Adelaide. Sport is a part of the social fabric of these communities, with lawn tennis, football, cricket, lawn bowls, and of course golf at the cornerstone of country living. There are 37 golf courses along the banks of the Murray.

It was difficult to comprehend paddling along and seeing million dollar homes built on the banks seemingly using as much water as they wished to keep lawns green. These lawns were only there to look at, and in the case of holiday homes only looked at by the occupier maybe once a month. To then see the drought stressed turf on a local sporting oval or golf course, facilities which are used and enjoyed by many, I cannot see the justification in much more water being used and even wasted elsewhere.

When I first put the kayak in the narrow flow of fresh, clear water running over pebbles near Towong in the Victorian Alps on November 1, where the river is not much more than a mountain stream, I wondered how much the water quality would deteriorate by the time I got to the lakes in South Australia and even how much would actually find its way there.

Crossing the Hume Weir and Lake Mulwala it was easy to see the water level was once much higher, but even given that there was still a lot of water held in these reserves. Through Victoria and NSW the rate of water flow was good and the current assisted in my daily miles covered (I averaged anywhere from 50-90km a day), but once I hit the locks downstream from Mildura it was a different story.

The river flow slowed dramatically and it was easy to see the quality deteriorate with an increase of weed and a black, unpleasant looking algae. It got to the extent that I even became hesitant in some spots to use the water for my cooking and drinking needs, but between towns I had no other option.

The further I travelled into South Australia the more apparent the water crisis became obvious. Offshoot lakes and streams were just hardened mud flats, jetties were stranded above dry beds and sand banks were like large islands in mid-stream. The final days paddle across the Goolwa lakes, an area I know so well given that we have a holiday home there, was quite frightening. There were large areas of sand and if I did not stick between the channel makers I would soon be marooned by the shallow waters.

MIND GAMES

It was not the physical challenge I found the most difficult about this particular journey,

The final day's paddle across the Goolwa lakes opened Cooper's eyes to just how low water levels had reached

although I must admit after a couple of times paddling for 12 hours and covering 90-plus kilometres there wasn't too much left in the tank. It was more the mental battle with myself and the elements.

Weather conditions varied every day and a couple of really hot days had me jumping into the river every hour to freshen up. On another occasion the rain just pelted all day making food and sleep stops less pleasant. Worst of all was the wind which at some times made it almost impossible to advance forward. At least when it was raining or hot there was little or no wind; give me the rain and heat any day!

The advantage of having to cope with what the elements throw at you and putting up with the discomforts of the bush means you quickly start to appreciate the comforts of home. After having to eat my camp cooking for so long I now also appreciate going to a restaurant a whole lot more. Even when I was a greenkeeper I always thought there was no such thing as a perfect day, there is always a downside. No wonder we spend so much time talking about the weather!

The mental challenge was persevering with the fatigue and the elements to keep going. In order to pep myself up, particularly when the elements were conspiring against me or when I was on a particularly isolated leg of the journey, I would do a lot of thinking and dreaming, even talking aloud to myself.

It would have been easy to convince myself of a sleep-in or an early day to pull up to camp, but to complete any challenge or task you have to have commitment. It is easy to have a plan or a goal but it is commitment that gets the job done. This is true whether it's in your private life or in business.

The wonderful thing about being in a kayak, especially at day break, is that you are a part of the environment. The wildlife accepts you as being a part of their patch. The birds sit on the logs and watch you pass; the emus, kangaroos and cattle would just give you a strange look and keep drinking. The turtles, instead of dropping into the water in fear, would stick their necks out almost as a sign of 'welcome to my world'.

In saying that, though, I am no naturalist, especially when it comes to a noise outside of the tent in the night (possums sound like elephants), the snake crossing the river with me in its path or the spider bite that prevented my shoe from fitting for a couple of days.

I can proudly report that I didn't capsize once (I'm pretty good at this), although early on in the journey I got swept under an overhanging willow which was backbreaking to get out of. I was also dragging a lure behind me and one time it got snagged. I grabbed the line to break it free and the line cut into my finger down to the bone. The Irish stew that night ended up looking like a Thai red curry, which the ants and flies that normally added to my cooking seemed to appreciate even more.

MORE THAN A MATCH

Most of all, the time alone in the kayak, away from the ringing phones and emails, gave me time to think and consider what I do in my life that is good and the things I need to do better. The trip was not about getting to the end; the thing I got most from the journey was a better understanding of myself.

I always knew I would make it. Because many thought I was not up to the physical challenge, including my own sons and work colleagues, reporting in on my progress meant I was never going to chuck it in until I could touch the sea water. (Apparently Ted Baker was running a book on where I would finish but would not tell me what he had his money on!)

The only time I doubted whether I was going to make it was when I happened to pass one of those big scavenger birds perched on a log. When I got around the next bend he was sitting there waiting for me. I must not have looked that good and he was probably thinking I would be on the menu that night!!

The timeframe I had set myself meant there was pressure on what I had to do each day and in the end it took two days longer than the annual leave I had applied for. It was a very emotional moment on 16 December, especially paddling the last 500 metres of my 2400km journey. I punched the air and my chest, elated by the success of having conquered my Everest and knocking off this challenge which I had with myself. Most of all, however, it was sharing this special moment with my sole buddy and the rock of our family, Jenny.

As for my next challenge? Well, I have been looking at maps of major waterways overseas, like from Amsterdam to Budapest, but that is only a dream at this stage. But then again, so was the first time I looked at a map of the mighty Murray.

RAISING THE PROFILE OF GOLF COURSE ENVIRONMENTAL MANAGEMENT

As part of the Australian Golf Environmental Initiative, the AGCSA has launched **Keeping it Green**, a monthly newsletter to help increase the environmental profile of Australian golf clubs.

If you've got a positive story to share with the industry contact: John Geary on 0412 293 125 or email jgeary@agcsa.com.au

Keeping it Green

Australian Golf Environmental Initiative Newsletter

An eight-year study of nutrient loss before, during and after construction of Colbert Hills Golf Course in Kansas, US was performed to assess the effect of human development on natural streams

Long-term monitoring of nutrient loss in golf course runoff

Kansas State University researchers undertook an eight-year monitoring study to assess the water quality changes with the development of a new championship golf course. Here they present their key observations and conclusions.

BY S. STARRETT, Y. SU, T. HEIER, J. KLEIN, J. HOLSTE AND M. PALOMA

Golf courses are often constructed close to natural streams or water bodies and the development of a new course often represents a dramatic change in land used. The establishment of a new course requires the removal of the original natural soil cover, which represents a potential for contamination of nearby streams, lakes and ponds through soil erosion and nutrients transport.

Occurrence of runoff is observed when precipitation rate exceeds soil infiltration capacity. Runoff originates soil erosion thus,causing transport of pollutants (soil nutrients, suspended particles, pesticides) from one place to another. Erosion of soils at two to 40,000-times the pre-construction erosion rate has been reported by Wolman et al. (1967).

Soil erosion and particulate and nutrient transport can increase the concentration of nutrients in surface water and consequently harm wildlife habitats by inducing uncontrolled growth of algae, depletion of dissolved oxygen available in the water, fish kill, and pipeline clogging (Litke, 1996).

While construction could significantly affect the natural stream condition, operation of golf courses requires inputs of fertilisers that contain plant nutrients (e.g.: nitrogen and phosphorus) and irrigation to maintain turf in an acceptable condition.

The potential of surface water contamination through soil erosion and nutrient transport from golf courses has been a subject of increasing environmental concern. Some studies have reported water quality of native grassland while some others have evaluated water quality impacted by golf course operation management (Dodds et al., 1996, Webb and Walling 1986, Olness et al., 1980, and Smith et al., 1992).

LITTLE KITTEN CREEK WATERSHED

This long-term monitoring study, undertaken by staff at Kansas State University, has been developed to assess the magnitude of the effect of nutrient loss on the surrounding surface water, during the different stages of a golf course development. To the extent of our knowledge, this is the most extensive long-term study evaluating the effects of nutrient concentration in surrounding natural surface water before, during and after construction of a golf course.

The development in question was Colbert Hills Golf Course which was to be constructed on the Little Kitten Creek watershed located near Manhattan in the Midwest state of Kansas. The watershed, covering 430 hectares, has elevations ranging from 420-340 metres decreasing from north to south. Land surface slope ranges from 0.04-0.14(m/m) with an average channel gradient of 0.032(m/m).

Originating from the northwest of the watershed, Little Kitten Creek flows about 3.2 kilometres from north to south before it leaves the studied watershed. It continues to run until it joins Wildcat Creek, a tributary of the Kansas River. Little Kitten Creek is an intermittent stream and during a typical year about five to 10 runoff events occur resulting from intense, convective thunderstorms. The channels of the drainage network are dry for most of the remaining time.

Soils from nine different 'series' were found in the watershed. 'Alluvial land' series soils are located near channels and are frequently flooded. The soils of this series are silt loam, clay loam, silty clay loam, and silty clay. The 'Benfield' series is the most common in the watershed. They are well drained with medium-to-rapid surface runoff and low permeability. The 'Breaks' series is located in small V-shaped drainage ways. Soils of this series are found on steep slopes and are usually deep. They are mostly silt loam or silty clay loam with some silty clay in the subsurface.

The 'Clime' series comprises calcareous soils located on uplands. They are moderately deep soils with a silty clay loam texture. The

'Dwight' series soils consist of a thin surface layer and dense subsoil. They are composed of silty clay. These soils are moderately well drained and have very low permeability. The 'Irwin' series is derived mainly from weathered shale. It is generally found on upland ridge-tops and side slopes. Its permeability is very low.

'Reading' soils consist of deep, nearly level and gently sloping soils on stream terraces and foot slopes in creek valleys. They are formed in alluvial sediments, and are composed of silt loams and silty clay loams. 'Tully' series are sloping soils located on foot slopes. These soils are formed in thick colluvial and alluvial deposits. They are mainly comprised of silty clay loam with some silty clay. They are well drained and the subsoil is slightly permeable.

Benfield, Clime and Tully series soils account for 68 per cent of the watershed, Alluvial lands and Ivan soils (11 per cent) and Breaks and Dwight (21 per cent). Because of their textures and locations in the watershed, Alluvial lands, Benfield, and Tully are the most erosion-prone soils in the watershed.

As part of the Flint Hills rangeland in northeastern Kansas, the Little Kitten Creek watershed had a pasture cover land use before construction of the typical mixture of tall grasses and woods with around 89 per cent grasslands, 11 per cent woodlands and negligible residential lands. Construction of the golf course started in July 1998. By early 1999, alteration of land cover had attained its peak when about 88 hectares (20 per cent of the total) of native cover was removed. By April 2000, the course was completed and disturbed lands were covered with grasses.

Climates in northeast Kansas are controlled by the movement of frontal air masses over the open inland-plains topography, and seasonal temperature and precipitation extremes are common. During the summer, temperatures near or above 38°C can occur.

Winter months are characterised by influxes of cold, dry polar air with temperatures as low as -20°C. About 70 per cent of the average annual precipitation of 865mm (Emmert, 1998) falls during the warm growing season (April through September). Only 10 per cent of the average annual precipitation falls as rain during the relatively dry winter months (December through February).

DATA COLLECTION AND ANALYSIS

In order to monitor the environmental impacts before construction (pasture cover), during construction and during early operation of the golf course, three stream gauging stations were set up in the watershed. Two stations, N16 (north of hole 16) and N14 (north of hole 14), were located on the north side of the area to monitor the quality of water entering the golf course property. SLK (South Little Kitten) was located at the south boundary of the golf course to monitor the quality of water leaving the golf course property.

Portable samplers were set up at each of the three stations to collect water samples during runoff events. Liquid detectors actuated the samplers at the beginning of a runoff event and the samplers collected grab samples at a pre-determined time interval of one or two hours.

Field sampling conditions did not allow inclusion of sample replicates as part of the study. Collecting runoff samples from almost all storms would produce higher constitute concentrations than a sampling method that collected samples every three months for example. So, these sampling methods would capture the periods with the highest concentrations.

Raw samples were stored in a freezer for future laboratory tests. Laboratory analyses were conducted at the Soil Testing Laboratory, Department of Agronomy at Kansas State ▶

Homogeneous Pellets

Reliable N-P-K delivery, balanced secondary elements and micronutrients, predictable response and consistent results are what you will see every time you apply BEST® Fertilisers. Research has shown that the maximum influence of nitrogen occurs when the nitrogen and phosphate are intimately associated together through a process known as positive nutrient interaction. Inside of every BEST® homogeneous pellet, there is a positive interaction between nitrogen, phosphorus and sulfur in increasing the availability and efficiency of each of these important nutrients.

TURF SUPREME 16-2-6
MINI TURF 16-3-6
MICRO®GREEN 10-1-13+Fe
EVERGREEN MINI 18-2-0+Fe
MINI PRO 12-3-13+Fe

www.simplotproline.com.au

Simplot PRO·LINE

Simplot PRO·LINE

ONCE AGAIN PROUDLY SUPPORTING THE AGCSA's 2009 NRL FOOTY TIPPING COMP

An aerial view of Colbert Hills which resides in the Little Kitten Creek watershed. The land the course was constructed on was originally 89 per cent pasture land and 11 per cent woodland

University. Water samples were analysed for total nitrogen (N), total phosphorus (P), NH_4-N, NO_3-N, ortho-P, total suspended solids (TSS) and total dissolved solids (TDS).

Field parameters measured at the time of sampling included specific conductivity, hydrogen-ion activity (pH), water temperature and dissolved oxygen concentration (DO). Results discussed in the following section focus on total nitrogen and total phosphorus.

Background water quality monitoring (pasture cover stage) was conducted prior to the start of golf course construction in July 1998. Water quality at this period was utilised as a baseline to evaluate the impact of construction and early operation of Colbert Hills Golf Course.

Water quality monitoring was also conducted during the construction period, from August 1998 (when construction work officially started) to April 2000 (when the golf course officially opened for play). Monitoring of water quality during early operation of the golf course was conducted from May 2000-October 2006.

IMPACT OF THREE DISTINCT PHASES ON WATER QUALITY

Pasture Cover: The water quality of unpolluted water bodies is dependent on local geological, biological and climatological conditions. These conditions control the mineral quality, ion balances and biological cycles of the water body. To preserve the quality of the aquatic environment, the natural balances should be maintained. Knowledge of the background quality is therefore necessary to assess human impacts.

Construction: The loss of land's natural coverage promotes rapid and significant erosion of soil surface, thus enhancing the loss of nutrients in runoff during and after rainfall events. Change in land use can highly increase the concentration of nutrients, like nitrogen and phosphorus, in the natural streams.

Early Operation: Once the golf course turf has been established the potential of surface water contamination through soil erosion and runoff decreases significantly. However, the application of fertiliser could represent a source of increasing nutrient transport to surrounding streams. It was hypothesised that stabilisation of the nutrient concentration in natural streams would be a slow process. Thus, monitoring of the early operation period was important to determine how long it would take the watershed streams to recover back to native stage-like conditions.

RESULTS AND DISCUSSION

The discussion focuses on water quality changes in Little Kitten watershed, as affected by total N and total P. Mean values and standard deviations were used to describe the trend of total N and total P changes through the three different studied stages. Weather conditions (dry years vs wet seasons) increased the variability of the data collected. However, the mean values were obtained utilising all collected data points for the correspondent watershed stage. Standard deviations represent the variability of the data.

TOTAL NITROGEN

Total N concentration during pasture cover, construction and early operation stages is illustrated in Figure 1. On average 1.3mg/L of total N was in Little Kitten Creek as it entered the golf course property during the eight years of study, the averaged value did not vary significantly during 1998 to 2006 early operation period. During the pasture cover stage the total N concentration in the surface water entering and exiting the watershed was similar and not statistically different.

This information is of importance to demonstrate that beyond the boundaries of Little Kitten Creek watershed there was no significant change in soil management that affected the incoming total nitrogen. However, the outflow data showed a different response than the total N concentration in the inflow.

Once the construction stage started the measured total N concentration increased significantly in the surface water due to runoff, especially when heavy rainfall events occurred. An average of 4.0mg/L total N was determined during the years of construction. The total N measured values exhibited a large interval of variation. Importance of this result is that the concentration of total N in the stream during construction is sensitive to both soil management and weather condition.

The averaged concentration of total N in the outflow during the early operation stage (May 2000-October 2006) was observed to be smaller than that observed during the construction stage. An average concentration of 2.4mg/L total N was determined. The standard deviation indicated that the magnitude of variation of the total N concentrations in the surface water decreased upon change of soil management (i.e.; once soil vegetation cover was reestablished).

During the first six years of the golf course operation, a reduction on the total N concentration was observed; however, the early operation total N concentration was about double the pasture cover total N value. Establishment of turfgrass required fertilisation which was a potential source of total N in the watershed.

TOTAL PHOSPHORUS

The results for total P in the watershed inflow and outflow, during eight years of study are illustrated in Figure 2. The total P in the inflow did not change significantly over the duration of this study. The average total P values for the pasture cover, construction and early operation stages were 0.49, 0.26 and 0.30mg/L.

During the pasture cover stage an average value of 0.45mg/L total P exited the watershed. Removal of soil vegetation cover increased the average value to 0.87mg/L total P. Increase of total P concentration in surface water was due to erosion and runoff enhanced rain events and lack of surface vegetation during construction period.

Similarly to what was observed for total N, the concentration of total P in the water decreased during the early stage operation. Vegetation reestablished on the surface was the main cause of the reduction of total P

In order to monitor the environmental impacts before construction, during construction and during early operation of the golf course, three stream gauging stations were set up in the watershed

concentrations in the surface water. The recovery of the surface cover reduced erosion of soil particles and thus reduced transport of nutrients to surface water streams.

Concentrations of total N and total P were found significantly greater during golf course construction than during the pasture stage. The increase of eroded soils carried particle-bound nitrogen and phosphorus to the stream. Inflow and outflow TN:TP ratios of the averages, at the three studied stages, were always lower than 8, which indicated limiting N availability in the streams.

Study of nitrogen and phosphorus in surface water is of extreme importance since excessive amounts of both nutrients in natural streams lead to eutrophication problems in lakes and water bodies. This study indicates that, if course management is operated adequately, the surface water quality in a golf course dominated watershed could be returned back to its original conditions.

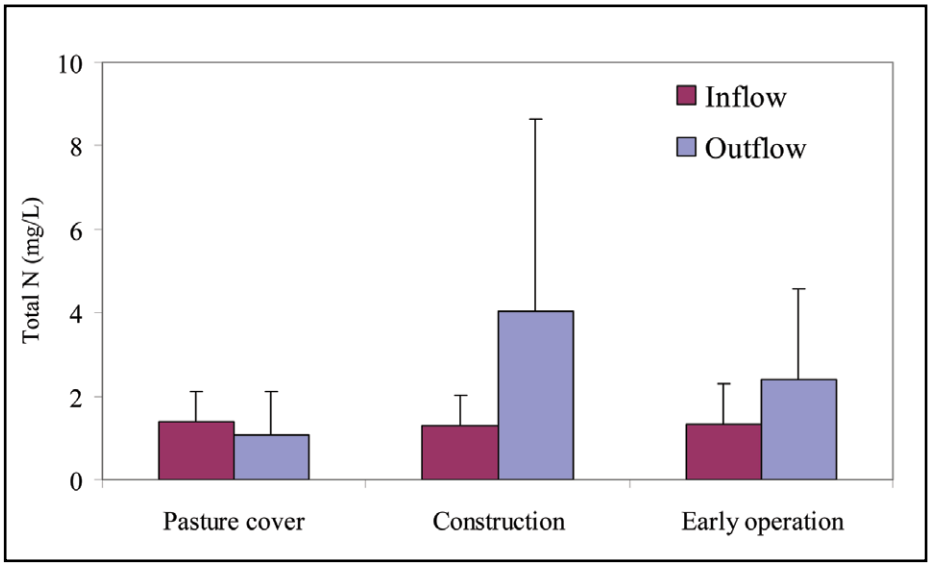
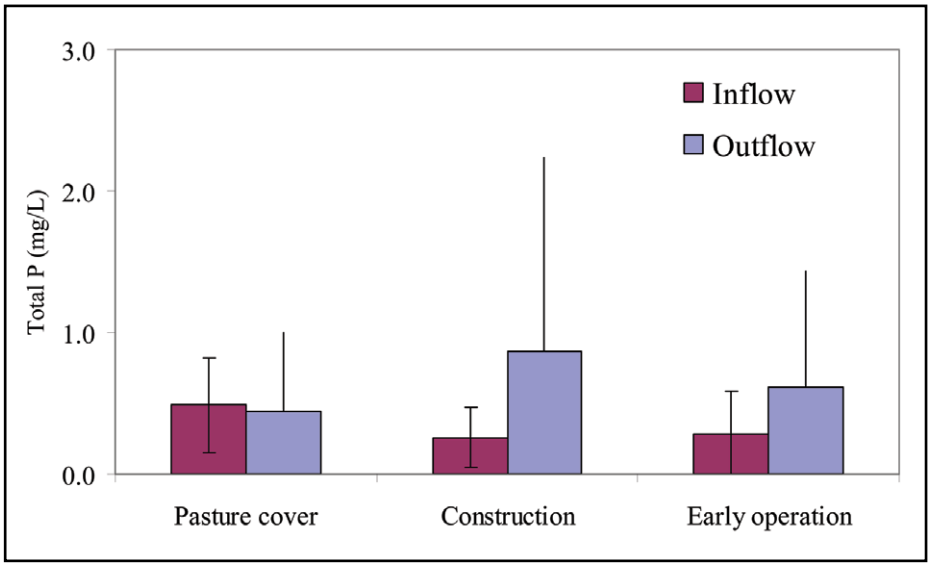


Figure 1: Total N measured in Little Kitten Creek entering and exiting Colbert Hills Golf Course during the three stages of land development

Figure 2: Total P measured in Little Kitten Creek entering and exiting Colbert Hills Golf Course during the three stages of land development



REFERENCES

Dodds, W.K. et al., 1996. *Nitrogen transport from tall grass prairie watersheds. J. Environ. Qual. 25:973-981.*

Emmert, B.A., 1998. *Hydrologic Modeling of Anthropogenic Impacts on Little Kitten Creek Watershed, Northeastern Kansas. Master Thesis. Department of Geography, Kansas State University, Manhattan, Kansas.*

Felton, G.K., and A.J. Powell. 1994. *Turfgrass chemicals exiting a well-managed golf course. Presentation at the 1994 international winter ASAE meeting, Atlanta, Georgia, December 13-16, 1994.*

Gross, C.M., Angle, J.S., and Welterlen, M.S., 1990. *Nutrient and sediment losses from turfgrass. Journal of Environmental Quality, 19:663-668.*

Jantz, D.R. et al., 1975. *Soil Survey of Riley County and Part of Geary County, Kansas. Soil Conservation Service. pg.67.*

Litke, D.W., 1996. *Sources and loads of nutrients in the South Platte River, Colorado and Nebraska. U.S. Geological Survey, Water resources Investigations Report 96-4029, 31p.*

Olness, A., E.D. Ehoades, S.J. Smith, and R.G. Menzel. 1980. *Fertilizer nutrient losses from rangeland in central Oklahoma, J. Environ. Qual. 9:81-86.*

Ryals, S.C., M.B. Genter, and R.B. Leidy. 1998. *Assessment of surface water quality on three eastern north Carolina golf courses. Environ. Toxicol. Chem. Vol. 17, No. 10, pp. 1934-1942.*

Smith, S.J. et al., 1992. *Water quality characteristics associated with Southern Plains grasslands. J. Environ. Qual. 12:595-601.*

USGA, 1994. *Golf and the environment. USGA, P.O.Box 708, Far Hills, New Jersey 07931*

Webb, B.W., and D.E. Walling. 1986. *Nitrate behavior in stream-flow from a grassland catchment in Devon, U.K. Water Res. 19:1005-1016.*

Wolman, M.G. and A.P. Schick. 1967*. Effects of Construction on Fluvial Sediment, Urban and Suburban Areas of Maryland. Water Resources Research, Vol. 3, pp.451-464.*

A well equipped workshop run by a trained turf technician can ensure that maintenance operations tick over smoothly

The working workshop

A functional workshop can make the world of difference to golf course maintenance operations. Here Celtic Manor Resort workshop manager Patrick Callaby looks at the key points of establishing a well-oiled efficient base.

I have been working as a mechanic for nearly 40 years and in the golf course industry for the past 23 years. I have seen numerous workshops during this time, both from small operations through to the current 54-hole (two workshop) facility here at Celtic Manor Resort where I have three techs working with me.

At Celtic Manor we have a huge fleet of very diverse machinery involving just about everything you can think of that can be found on a machine – electrics, electronics, computers, diesel, petrol and 2-stroke engines, transmissions that involve everything from a simple belt and pulley set-up, sophisticated hydrostatic drives, electric clutches and hydraulic transmissions.

As the standard of greens presentation gets higher and height of cut gets lower, this requires that mowers are in top condition which calls for specialist machinery to sharpen both bedknives and cylinders and technicians who know how to use them to the best effect.

The vast array of machinery found on the average 18-hole golf course can be daunting for the fainthearted and ideally every golf club should have a well trained, dedicated and self-motivated turf technician. I think if you asked course managers they would all say the same because they are the people who are most inconvenienced by machinery failures. But there are other factors preventing clubs from employing a mechanic, first and foremost being budgeting constraints, although many clubs now see the wisdom of maintaining expensive machinery for a longer working life.

Justification often comes when he is employed in a greenkeeping capacity as well, a situation which works well for some clubs but often means that person is limited to changing oils and filters on wet days and mending punctures. More difficult work is often contracted out to local dealerships.

Where greenkeeping is prioritised over machinery maintenance, still having a person who is competent and can be available in the workshop can pay dividends in less downtime. Machinery problems can be addressed at the earliest opportunity as opposed to transporting to the nearest dealership.

SETTING UP

A small workshop is generally created with a small budget in mind, with a few tools and some space to work on machines on wet days. 'Created' is possibly not the right word for such a set-up, more like "evolved", happening almost by accident or out of necessity.

A medium workshop for say 18-36 holes takes considerably more money to set up and a lot more thought. The skills of the person working there will dictate the level of equipment to be purchased therefore it will also have a bearing on the money required initially. As the skills of the mechanic develop then the equipment level will rise and must be viewed almost as a work in progress.

Will the budget run to grinding machinery? Again it depends on the person employed, how much work is generated, the general age of the machinery and its condition, the level of presentation and whether there is an exchange programme in place for machinery. All these things need to be considered, after all it's pointless buying a mig welder if the mechanic can't weld for instance.

A large workshop is usually purpose built and incorporated inside the main building. Often with heating, good lighting, good access from outside and inside, airy and spacious, if these things are in place we need only address

SETTING UP – TOP TIPS TO ENSURE AN EFFICIENT TECHNICIAN'S WORKSHOP

- Make it as big as you can and have as much bench space as room allows.
- Make the bench as strong as you can, don't skimp on materials, fix to walls.
- Make the top of steel plate, do not use wood. This will soak up oil and heavy objects will be difficult to slide.
- Paint the floor a light colour; thin the first coat by 50 per cent. This will help reduce concrete dust. Finish off with a non-thinned topcoat.
- Lots of light, overhead and on walls.
- Get a space heater.
- Buy good quality jacks and not cheap imports, the warranties are worthless.
- Get a good quality six-inch vice.
- Buy good quality axle stands.
- If operation justifies it, get cylinder and bedknife grinding equipment.
- Buy workshop grade hand tools. Leave money in the budget for more.
- Buy power tools, hand-held electric drill with half inch chuck and variable speed trigger, it's more versatile.
- Angle grinder, four-and-a-half inch. Six-inch bench grinder. Parts washer.
- A sink with hot running water. Use a good quality hand cleaner.
- Computer with Internet link is a must. Printer, telephone, access to a fax.

the equipment level. A larger facility would justify a large workshop and more than justify an in-house grinding set-up.

This is where costs go up considerably, with quality grinders for both cylinders and bedknives depending on manufacturer and specification. Gas and electric welding equipment, a machine lift, tyre changing machine, jacks/stands, bench grinder, angle grinder, electric drill, vice, bins for parts storage – the list is considerable.

HAND TOOLS

Hand tools are much like chefs and knives – the individual supplies them. So it follows that the tools used would be much the same in each workshop. A rough guide would be:

- Set of metric spanners 5mm up to 30mm;
- Set of metric spanners 5mm up to 19mm;
- Set of imperial spanners 5/16" up to 1 1/4";
- Set of imperial spanners 5/16" up to 3/4";
- Full set of sockets and screwdrivers;
- Air impact wrench in 1/2" drive with correct grade 6 point sockets;
- A 16oz and 32oz ball pein hammer;
- Set of cold chisels and prise bars; and
- Test light and multi meter.

Then you have pliers, sidecutters, vice grips, point nose pliers, hacksaw (standard and junior), breaker bar, circlip plier set (heavy duty), wire brush, oil filter wrench, and many other items that one begs, borrows and steals over the years. A mechanic's tool kit is very personal and differs from one to another but here you have the nucleus, the foundation tool kit without which the job cannot be done. Depending on grade and make costs can vary.

COMMUNICATION

An essential component of any workshop is communication between the workshop and greenkeeping staff. Our maintenance facility has many signs asking for machinery faults to be reported to the workshop as opposed to telling one of the technicians over lunch when it could easily be forgotten about. The fault is then entered on a task sheet which helps the manager to prioritise repairs. All greenkeepers should be trained on individual machines regardless of past experience and reporting faults should be part of that.

I think the way to encourage greenkeepers to report faults is to keep working relationships friendly, thank the person for reporting the fault, add the fault to the task sheet in front of them (if possible) to demonstrate and confirm that his observations are valued. Unreported faults can be dangerous and must be discouraged.

Through the wonderful world of Internet and email, turf technicians now have a range of resources at their hands as well. I am an active member of both www.golftechs.net and www.igcema.org. Golf techs.net is a somewhat casual site catering for technicians, mainly Americans, but there are other nationalities that contribute to the forums.

The International Golf Course Equipment Managers Association is built on education for technicians. There is also a forum and members may ask and answer questions on many subjects. The word 'international' means just that and we have 852 members from about 15 countries.

ACKNOWLEDGEMENTS

Patrick Callaby is workshop manager at Celtic Manor Resort in the UK. This article has been adapted and reprinted courtesy of Patrick Callaby and Greenkeeper International.

STATE TURF TECH CONTACTS

VTETA: Tony Hopcraft (0411 106 429, tony@vteta.info); John Phelan (0412 121 533, john@vteta.info); Greg Stringer (ph 0432 397 329). **NSWTETA:** Sam Olah (0418 296 111, s-m-s@bigpond.com). **QTETA:** Phil Newton (philnewton@people.net.au)

ON THE MOVE

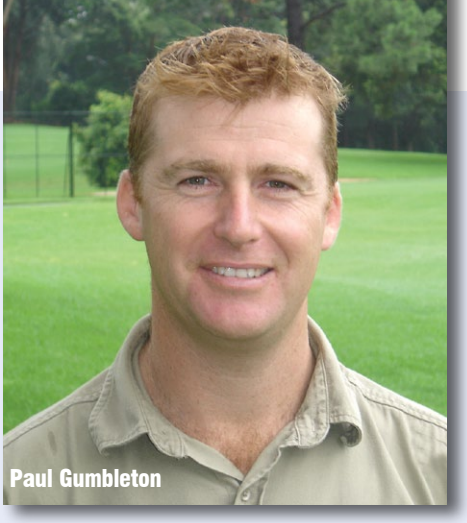
There has been plenty of movement within Troon Golf's Queensland operations in recent times. Brookwater Golf Club superintendent and Troon director of agronomy **David Lunardelli** has moved to Hope Island Resort where he replaces Stuart Barker, while former Pacific Harbour Golf and Country Club superintendent Geoff Bennell assumes the Brookwater mantle. **Kelvin Nicholson**, who has been assistant at Pacific Harbour since its opening, makes the move up to superintendent there.

~~~

Elsewhere in Queensland just 18 months into his stint at Hyatt Regency Coolum on the Sunshine Coast, **Darryl Edwards** has moved on and has taken up the reins at Gold Coast Burleigh Golf Club, former home to immediate past president of the AGCSA Jeff Gambin. Edwards, who prepared Coolum for the past two Australian PGA Championships, resides on the Gold Coast.

~~~

There have been a number of assistant superintendent movements at some of Sydney's well known golfing establishments.


Paul Gumbleton

Paul Gumbleton, former 2IC at Pennant Hills, has moved north to join Mark Couchman at Cromer Golf Club, while Bonnie Doon Golf Club superintendent David Scaife has appointed **Tim Allen** as his new assistant.

~~~

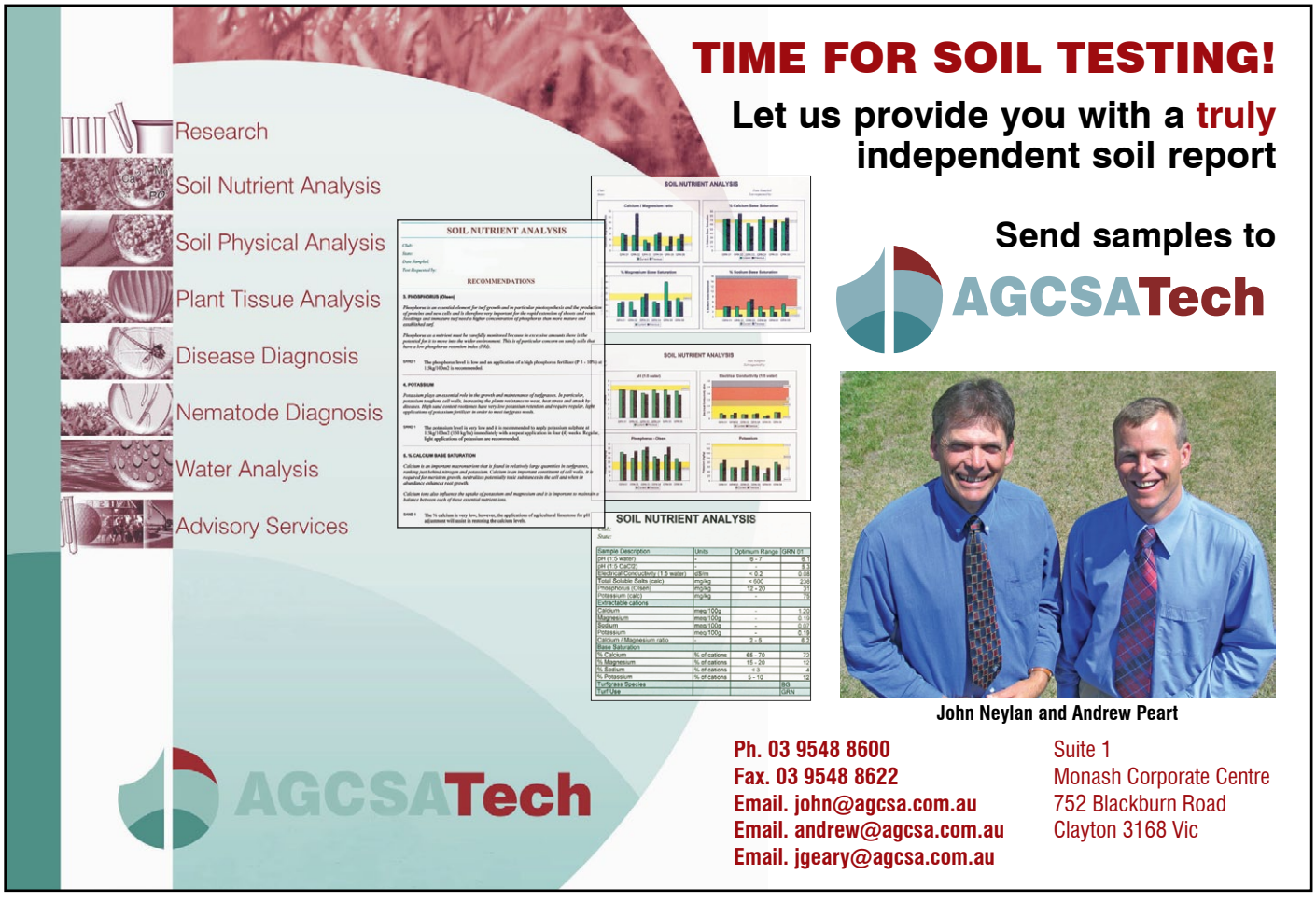
A few suburbs north at Rose Bay and Royal Sydney Golf Club superintendent John Odell has elevated **Timothy Moule** and **Shane Bromfield** into assistant roles. Likewise, at the Australian Golf Club superintendent David Honeysett has promoted **Nicholas Colefax** from within and brought in **Matthew Smith** from Chatswood Golf Club.

~~~

After receiving nearly 400 individual hits on the AGCSA website's job pages, the Riversdale Golf Club top job has gone the way of **David Mason**. Mason, who was a one time assistant at Metropolitan Golf Club, makes the move from Warrnambool Golf Club where he was superintendent over the past four and a half years. Also in Melbourne, **Dean Bailey** has departed Victoria Golf Club, where he was assistant under Ian Todd, to take over from Ian Emery at Rosanna Golf Club. As an aside, former Riversdale superintendent **Michael Picken** has picked up some work teaching turf management students at Chisholm TAFE on Victoria's Mornington Peninsula.

~~~

Glen Frewin, cousin of Barwon Heads Golf Club course manager and former AGCSA president Peter Frewin, has been appointed superintendent at Axedale Golf Club just east of Bendigo. Frewin replaces **Andrew Bowles** who has moved interstate with his family to take up an irrigation position with Advanced Pumping and Irrigation in Coffs Harbour. Frewin was Bowles' 2IC for the past five years.


~~~

TURFCRAFT MACHINERY AUSTRALIA

BETTER MACHINES
BETTER SOLUTIONS
EVERY APPLICATION

Contact
John Purtell
Phone: (02) 9771 9030
Fax: (02) 9771 9060
Mobile: 0418 264 290

john@turfcraftmachinery.com.au • www.turfcraftmachinery.com.au

BARONESS®

A line up to satisfy most needs

GM SERIES

The rotary mowers in the GM Series are designed for fast efficient cutting of long wide spaces.
They are particularly suited for golf course maintenance, parklands, and cutting the median strips of highways.

GROUND MANAGEMENT SERIES

Creating products for the proper upkeep of park and garden space requires a resource of experience and knowledge, not only of the machines themselves but also of what they will be required to do. The mowers in this series are designed to accommodate the many different needs of golf courses, parklands and garden maintenance.

LM SERIES

The mowers in the LM Series use reel cutters designed to cut grass leaving behind a clean beautiful finish. The wide selection of machines in this series range from mowers for your home lawn to tractor type mowers for golf courses and parks.

TRY ONE. YOU'LL BUY ONE.

SMITHCO

One of the most popular bunker rakes of all. A top-seller for Smithco, well known for its outstanding performance and reliability. It is available in three models, offering three-wheel or two-wheel drive and gasoline or diesel power. The super star is our newest and most advanced sand maintenance rake, with special engineering to give you bunkers that are perfect in firmness and finish. It incorporates many new and exclusive features.

JACKSON JOINS BARMAC

Paul Jackson has joined Barmac Industries in the role of business manager (non-crop products) located in Sydney. Paul, who recently completed a Masters of Business to go with his Masters in Turf Management, was most recently with Bayer Environmental Science as sales and marketing manager.

Jackson will manage the range of Barmac turf products, including weed, insect and disease management tools, along with the range of specialist turf nutrition products such as Noculate, The Andersons, Manni-turf and Coron. Jackson will also manage Barmac's specialty custom blending fertiliser programme.

Elsewhere, the company has announced the addition of Noculate Liquid to its range of products. Noculate Liquid is a new generation liquid microbial inoculant which enables greater flexibility of application. Turf managers can now add essential microbes to the soil, at times when further nutrition is not required. Noculate Liquid is scientifically formulated with quantifiable amounts of *Bacillus* spp and *Trichoderma* spp. Humic acid, kelp and other plant vitamins are also included to enhance plant growth.

Barmac has added Noculate Liquid to its range

For more information regarding this new product, or to contact Paul Jackson, call 0407 386 633, email pjackson@barmac.com.au or visit the Barmac website www.barmac.com.au.

TURF CULTURE NEW AGENT

Turf Culture has announced that Newcastle Greenkeepers Supplies has joined its agent team in the Newcastle region. Newcastle Greenkeepers Supplies can be contacted on (02) 4946 0110. For a full list of Turf Culture agents, go to www.turfculture.com.au

GETTING OUT OF THE ROUGH

Ransomes Jacobsen has unveiled a new generation in rough mowing with the introduction of the HR 3300T rough mower. The new HR 3300T out-front rotary mower offers improved mowing efficiency, more evenly dispersed grass clippings, the ability to cut a wide variety of grass, low maintenance, operator storage and reduced noise and vibration levels.

The HR 3300T comes with a choice of 152 cm (60") rear discharge and mulching decks or 183 cm (72") rear or side discharge decks. Powered by 33hp Kubota engine, the off-set caster wheels provide better edge-trimming on verges, while all-hydraulic drive means low levels of maintenance and less lubrication.

For more information on the HR 330T visit www.powerturf.com.au.

MELBOURNE TO HOST SUMMIT

Rain Bird, in partnership with Smart Approved Water Mark (SAWM), will conduct its 10th Intelligent Use of Water Summit at the Grand Hyatt in Melbourne on Thursday, 19 March.

The free event will feature key representatives from Australian landscape industry associations, research institutes and water utilities and will cover a number of topics including water-efficient landscape design, alternative water sources (reclaimed/non-potable water) for irrigation and the relationship between water and climate change.

Among panelists for the day are Mary Ann Dickinson (executive director, Alliance for Water Efficiency, Chicago, US); Geoff Gardiner (general manager service sustainability, City West Water); Julian Gray (CEO, Smart Approved Water Mark); Benjamin Grumbles (assistant administrator for water, US Environmental Protection Agency, (Washington, DC); John Langford (director, Melbourne Water Research Center, University of Melbourne and Professor, Dept. of Civil and Environmental Engineering); and Greg Stewart (general manager, Total Eden; chair of Irrigation Australia WA Region).

The programme for the event will consist of a morning panel followed by lunch and then several afternoon breakout sessions. For more information contact Rain Bird on 1800 424 044 or email jwsmith@rainbird.com.

RAIN BIRD PROMOTES MANAGERS

Marcus Turpin

Rain Bird Australia has announced the promotion of two of its area sales managers. After eight years with the company current area manager golf in New South Wales and Queensland Greg Smith has been promoted to senior area manager golf and services.

In the West, Marcus Turpin has also taken on extra responsibilities and is now area manager turf (WA) and marketing programme manager. Turpin, who has been with Rain Bird Australia for less than three years, has a Diploma of Business Management, a Diploma of Irrigation, Certificate 4 in Human Resources and is a certified irrigation landscape auditor. He will be responsible for overseeing Rain Bird's national marketing campaigns for contractors and dealers, adding to the responsibility of his territory area management.

GET WIRED WITH UNDERHILL

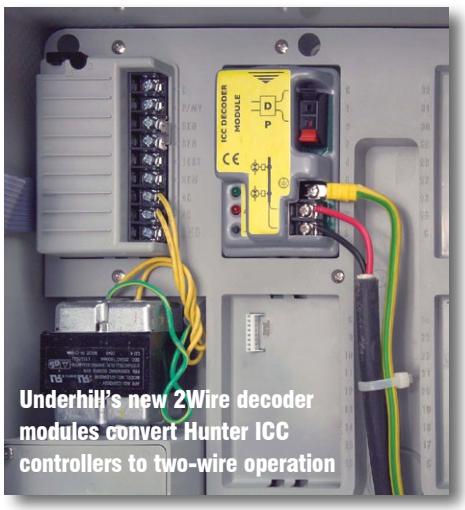
In an effort to help irrigation contractors save time and labour on large commercial jobs, Underhill now offers 2Wire decoder modules that convert Hunter ICC controllers to two-wire operation. With a 2Wire system, just a single pair of wires extends from the controller to each valve in the irrigation network.

The 2Wire decoder module snaps directly into the ICC's module slot. All zones, or only selected stations in a hybrid system, can be converted to two-wire operation. Once installed in the controller, the Underhill 2Wire decoder module is then connected to a series of 2Wire field decoders placed at the valve stations. Each field decoder is programmed for operation with a unique station address recognised by the module.

For more information contact Better Methods on (02) 9524 5366

AN EVERGREEN AUTUMN

Simplot Proline has released a new homogenous mini prilled fertiliser for autumn. Best Evergreen Mini is designed to give a deep long lasting colour. The mini-sized homogeneous pellets contain 5 per cent non-staining iron, ammoniacal nitrogen, the most effective source of N for all seasons, and 2 per cent phosphate for plant establishment and root development. Contact your Simplot representative for more details.



Underhill's new 2Wire decoder modules convert Hunter ICC controllers to two-wire operation

"The most water efficient and best value for money rotor built for today's golf environment."

DT Series Sprinklers

The Toro DT Series Sprinkler brings together over 40 years of Golf Irrigation knowledge with the most recent advances in technology and water management.

DT's key feature, the Dual Trajectory main nozzle offers a 25° (standard) or 15° (low angle) setting in one easy adjustment.

Exclusive dual back nozzle options and numerous inner and intermediate nozzle combinations improve watering efficiency on greens, tees, fairways and native grasses, giving more performance flexibility than any other sprinkler available.

Perfect for upgrades. DT Series conversions retrofit to 600, 700 and 800 series sprinkler bodies.

For further information contact your local Toro dealer or phone 1300 130 898.

TORO Count on it.

HGHadTIRC3788 JAN 09

AGCSA

TURF INDUSTRY BOOKSHOP

AGCSA PRODUCED DVD's	Non-Member	Member
(DVD) Environmental Issues for Golf Course Architecture	$88.00	$66.00
(DVD) HR presentation and templates by Daryl Sellar	$88.00	$66.00

AGCSA PUBLICATIONS	Non-Members	Members
2008 Turfgrass Management Diary	$86.25	$73.30
Sportsturf Protection Manual - The Complete Guide to all Turf Protection Products	$253.00	$215.05
Improving the Environmental Management of New South Wales Golf Courses	$57.50	$ 50.00
Improving the Eco-Efficiency of Golf Courses in Queensland	$57.50	$ 50.00

GOLF	Non-Member	Member
A Century of Greenkeeping	$142.36	$123.80
A Natural Course for Golf	$142.36	$123.80
A Practical Guide to Ecological Management on the Golf Course	$ 87.04	$ 73.98
Best Golf Course Management Practices	$316.25	$275.00
Bird Conservation on Golf Courses	$ 94.88	$ 82.50
Bunkers, Pitts & other hazards	$194.11	$168.80
Cricket Grounds	$208.39	$181.30
Cricket Wickets: Science & Fiction	$62.50	$ 50.00
Discovering Donald Ross-The Architect & His Golf Courses	$300.49	$261.30
Ecological Golf Course Management	$197.68	$171.90
A Guide to Golf Course Irrigation System, Design & Drainage	$253.00	$220.00
Golf Course Architecture -Design, Construction & Restoration	$208.49	$181.30
Golf Architecture – A World Perspective Vol 3 – Paul Daley	$ 63.25	$ 55.00
Golf Course Design	$221.38	$192.50
Golf Course Irrigation: Environmental Design & Mgmt Practices	$221.38	$192.50
Golf Course Management & Construction	$445.63	$387.50
Golf Course Tree Management	$151.00	$131.30
Golf Course Turf Management: Tools and Techniques	$316.25	$275.00
Golf Facility Planning	$222.86	$193.80
Golf Greens and Greenkeeping	$155.25	$135.00
How to Build a Sand based Golf Green	$86.00	$ 75.00
Human Resource Management for Golf Course Superintendents	$126.50	$110.00
IPM Handbook for Golf Courses	$197.68	$171.90
Keepers of the Green: A History of GC Management	$150.29	$130.70
Managing Wildlife Habitats on Golf Courses	$150.29	$130.70
Masters of the Links-Essays on Art of Golf Course Design	$ 87.04	$ 75.70
Practical Golf Course Maintenance – Magic of Greenkeeping	$173.99	$151.30
Problem Solving in Golf courses, Sportsfields, the Landscape, and Racecourses	$80.00	$ 70.00
Rough Meditations (HB)	$ 87.04	$ 75.70
Superintendents Handbook of Financial Management	$126.50	$110.00
Sustainable Golf Course:Guide to Environmental Stewardship	$165.36	$143.80
The Care of the Golf Course – 2nd Edition	$166.06	$144.40
The Cricket Pitch & its Outfield	$142.36	$123.80
The Golden Age of Golf Design	$221.38	$192.50
The Golf Rules Dictionary	$158.15	$137.50
The Golf Course – Planning, Design, Const and Mgmt - HB only	$366.61	$318.80
The Good Doctor Returns	$ 71.18	$ 61.90
The Life and Work of Dr Alistair Mackenzie	$215.63	$187.50
The Links	$189.75	$165.00
The Sand Putting Green - Construction & Mgmt (leaflet)	$ 28.51	$ 24.80
The Sandbelt	$156.25	$135.90
The Spirit of St. Andrews	$102.81	$ 89.40
The Superintendent's Guide to Controlling Green Speed	$142.36	$123.80
Turf Management for Golf Courses	$363.74	$316.30

SOILS	Non-Member	Member
Growing Media for Ornamental Plants and Turf	$100.63	$ 87.50
Bioremediation of Contaminated Soils: Agronomy Monograph 37	$347.88	$302.88
Introduction to Soil Microbiology	$173.99	$151.30
Mineral Nutrition of Higher Plants – 2nd Edition	$205.61	$178.80
Practical Soil Management	$ 57.50	$ 50.00
Principles of Soil Chemistry – 3rd Edition	$208.49	$181.30
Soil Analysis: An Interpretation manual	$194.11	$168.80
Soil Fertility Evaluation and Control	$180.25	$156.74
Soils & Soil Management	$257.36	$223.80
Soils & Their Environment	$215.63	$187.50
Turfgrass – No 32 in the series Agronomy	$221.38	$192.50

TURF & PESTS	Non-Member	Member
Ausgrass: Grasses of Australia: CD-Rom & Manual	$142.36	$123.80
Australian Weed Control Handbook - 10th Edition	$110.74	$ 96.30
Beards Turfgrass Encylopedia for Golf Courses, Ground, Lawns And Sportsfields	$395.36	$343.80
Biological Control of Weeds	$142.36	$123.80
Bowling Greens – A Practical Guide	$ 35.99	$ 31.30
Color Atlas of Turfgrass Diseases	$270.25	$235.00
Color Atlas of Turf Weeds	$308.78	$268.50
Compendium of Turfgrass Diseases	$71.88	$ 62.50
Compendium of Turfgrass Diseases 3rd Edition ON SPECIAL	$11.000	$ 98.00
Complete Guide to Pest Control With & Without Chemicals	$208.49	$181.30
Controlling Turfgrass Pests 2nd Edition	$337.87	$293.80
Creeping Bentgrass Management - Summer Stresses	$184.00	$160.00
Cricket Grounds	$208.49	$181.30
Cricket Wickets – Science vs Fiction	$75.00	$ 65.00
CSIRO Handbook of Australian Weeds	$ 79.11	$ 68.80
Destructive Turfgrass Insect - Biology, Diagnosis & Control	$258.75	$225.00
Diseases of Turfgrass	$345.00	$300.00
Diseases of Turfgrass CD-Rom	$316.25	$275.00
Fertilisers for Turf	$ 79.11	$ 68.80
Field Guide to Weeds in Australia	$136.61	$116.10
Fundamentals of Turfgrass Management	$181.12	$157.50
Fundamentals of Weed Science 2nd Edition	$237.24	$206.30
Gardening with Grasses	$86.25	$75.00
Grasses of New South Wales	$ 51.75	$ 45.00
Grasses of Temperate Australia – A Field Guide	$103.50	$ 90.00
Grasses: Systematics & Evolution	$251.61	$218.80
Handbook of IPM for Turf & Ornamentals	$337.86	$293.80
International Turf Management Handbook	$337.86	$293.80
Lawn Care – A Handbook for Professionals	$222.86	$193.80
Management of Turfgrass Diseases -3rd Edition	$244.37	$212.50
Managing Bermudagrass Turf – Selection & Construction	$229.31	$199.40
Managing Turfgrass Pests	$359.38	$312.50
Manual of Grasses	$142.36	$123.80
Mathematics of Turfgrass Maintenance – 3rd Edition	$126.50	$110.00
Native Grasses:Handbook for Temperate Australia 3rd Edition	$ 38.86	$ 33.80
Natural Turf for Sport & Amenity	$173.99	$151.30
Noxious Weeds of Australia – Revised Edition	$280.36	$243.80
Nursery & Landscape Weed Control Manual	$142.36	$123.80
Organic Control of Weeds	$ 26.67	$ 23.20
Picture Perfect, Mowing Tech for Lawn, Sports & Turf	$122.24	$106.30
Poa Annua – Physiology, Culture & Control of Annual Grasses	$174.22	$151.20
Rootzones, Sands & Top Dressing Materials for Sports Turf	$122.24	$106.30
Salt Affected Turfgrass Sites	$221.38	$192.50
Sands for Sports Turf Construction & Maintenance	$ 79.11	$ 68.80
Seashore Paspalum – The Environmental Turfgrass	$213.54	$185.70
Sports Fields – A Manual for Design, Construction & Maintenance	$253.00	$220.00
Sports Turf & Amenity Grasses – A Manual for Use & Identification	$122.24	$106.30
Sports Turf & Amenity – Grassland Management	$158.13	$137.50
Sports Turf - Science, Construction & Maintenance	$316.25	$275.00
Tree, Turf, Ornamental Pesticide Guide	$115.00	$100.00
Turf Irrigation Manual	$179.74	$156.30
Turf Managers HBK for Golf Course Construction, Renovation & Grow-In	$213.54	$185.70
Turf Weeds and Their Control (HB)	$313.38	$272.50
Turfgrass: Agronomy Monograph No 32	$221.38	$192.50
Turfgrass Diseases & Associated Disorders	$115.00	$100.00
Turfgrass Installation, Management & Maintenance	$337.86	$293.80
Turfgrass Maintenance Reduction Handbook – Sports & Golf	$258.75	$225.00
Turf Management in the Transition Zone	$156.25	$132.80
Turfgrass Management – 7th Edition	$284.63	$247.50
Turfgrass Management Information Directory	$126.50	$110.00
Turfgrass Patch Diseases	$194.11	$168.80
Turfgrass Pests	$ 94.88	$ 82.50
Turgrass Problems: Picture Clues & Management Options	$102.81	$ 89.40
Turfgrass Science & Culture	$323.49	$281.30
Turfgrass Science & Management 3rd Edition	$222.86	$193.80
Turfgrass Soil Fertility & Chemical Problems	$287.50	$250.00
Weeds an Illustrated Guide to Weeds of Australia	$197.68	$171.90
Weed Science: Principles & Practices	$284.63	$247.50
Weed Ecology: Implications for Management 2nd Edition	$401.11	$348.80
Weed Control Handbook: Principles 8th Edition	$363.74	$316.30

WATER & IRRIGATION	Non-Member	Member
Agricultural Salinity & Drainage	$ 79.11	$ 68.80
Design & Construction of Small Earth Dams	$230.00	$200.00
Drainage for Sportsturf & Horticulture (PB)	$ 58.53	$ 50.90
Drip Irrigation Management leaflet	$ 11.50	$ 10.00
Evaluating Turfgrass Sprinkler Irrigation Systems (leaflet)	$ 11.50	$ 10.00
Fertigation	$253.00	$220.00
Nitrates in Groundwater	$251.61	$218.80
Simplified Irrigation Design 2nd Edition	$196.29	$170.70
The Surface Irrigation Manual	$316.25	$275.00
Turf Irrigation Manual	$186.88	$162.50
Wastewater Re-use for Golf Course Irrigation	$316.25	$275.00
Water in Australia: Resources & Management	$136.55	$118.75

BEST SELLERS FOR 2008 - 2009

Turf Managers Handbook for Golf Course Construction and Grow-In – **B. Charles**
Destructive Turfgrass Insects, Biology, Diagnosis and Control – **Daniel A. Potter**
Discovering Donald Ross-The Architect & His Golf Courses – **Bradley S. Klein**
Growing Media for Ornamental Plants and Turf – 3rd Edition – **K. Handreck, N. Black**
Golf Course Management & Construction – Environmental Issues – **James Balogh and W. Walker**
Golf Course Irrigation System – Design and Drainage – **Edward Pira**
Keepers of the Green – A History of Golf Course Management – **Bob Labbance**
Turf Managers Handbook for Golf Course Construction, Renovation and Grow-In – **B. Charles**
Turf Management for Golf Courses – **James B. Beard**
Turfgrass Soil Fertility & Chemical Problems – **R. N. Carrow, Waddington & Rieke**

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

The AGCSA has an extensive range of books that can ordered through the AGCSA website, and also through the accompanying order form.
Postage: $9.90 for first book and $1.10 for every book after.

Sustainable Golf Courses: A Guide to Environmental Stewardship

By Ronald G. Dodson

WILEY 2005

Improved environmental management has been a clarion call within the golf maintenance industry for many years now and around the world golf clubs, golf organisations and trade companies that serve its practitioners are minimising the impact their operations have on the environment.

The AGCSA is one such organisation that has been at the forefront of this with the launch of the recent Australian Golf Environmental Initiative and establishment of the Australian Golf Environment Foundation. Likewise through the development of e-par, Australian superintendents now have access to one of the most comprehensive and golf specific environmental management systems available to the industry.

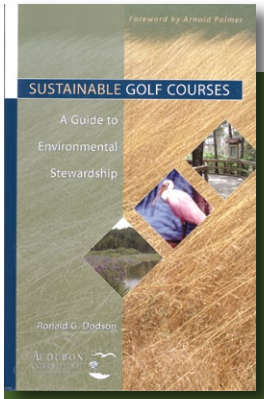
Another organisation that has driven home the green message for many years has been Audubon International. The US-based organisation was founded by Ronald G. Dodson and in conjunction with the United States Golf Association formed the Cooperative Sanctuary Program for Golf Courses, with a number of Australian clubs achieving certification.

A prolific campaigner for the environment, in 2000 Dodson penned Managing Wildlife Habitat on Golf Courses which provided golf course managers with a practical framework for environmentally sensitive land management practices. Dodson followed that up with this edition's review subject Sustainable Golf Courses: A Guide to Environmental Stewardship which was published in 2005.

Complete with a foreword from Arnold Palmer, the 288-page hardcover book aims to serve as a reference for all those involved in planning and constructing new golf courses, and those involved in the management of golf courses, to help meet the economic, ecological and social issues facing golf.

One of Dodson's key messages is that the game of golf can be a catalyst for change, bridging the gap between what is thought of as 'development' and what is thought of as 'sanctuary'. Dodson firmly believes that golf can be a true agent of change in the way society lives, works and recreates.

Dodson also expounds the virtues of returning the game to its roots. That doesn't necessarily mean shunning new technology; rather we should remember that the true game of golf was played in nature. Dodson laments the machine age which in some instances has seen new golf courses designed with little attention to the natural landscape, cutting through wildlife habitat and changing the natural course of watersheds.



Price: $143.80 (AGCSA members)

$165.36 (Non-member)

Full of useful information that can be applied to numerous environmental issues that can present themselves to superintendents, Sustainable Golf Courses demonstrates that with a bit of forethought golf courses can provide many attributes of a nature reserve. The book contains a range of interesting case studies as well as environmental research articles from the USGA.

Dodson begins the book by asking the question – Sustainable golf courses – an oxymoron? – before putting the case for sustainability. Following chapters look at establishing an environmental philosophy and ecological principles before Dodson embarks on the topic of new golf course development and the many environmental issues that come with their construction. A chapter is devoted to wildlife habitat and water quality and conservation issues, while the importance of outreach and education is also discussed later in the book.

ORDER FORM - ORDERS CAN ALSO BE EMAILED TO info@agcsa.com.au

Name: .....

Postal Address: .....

City/Suburb: ..... **State:** .....

Postcode: ..... **Daytime Phone Number/Mobile:** .....

Please supply the following books:

QTY	BOOK TITLE	AUTHOR	PRICE

Subtotal: .....

Please add postage ($9.90 for the first book, Each additional book $1.10 per book)

Total now due: $ .....

❑ **I enclose my cheque/money order made payable to the AGCSA, or**

❑ **Please charge this purchase to my credit card account**

❑ **Mastercard** ❑ **Visa**

Card Number: ...../...../...../.....

Expiry Date: ..... /.....

Cardholder Name: .....

Address: .....

Signature: .....

Send completed order form and payments to:

AGCSA

Suite 1, Monash Corporate Centre
752 Blackburn Road,
Clayton, VIC 3168
Phone: (03) 9548 8600
Fax: (03) 9548 8622
Email: info@agcsa.com.au

NSWGCSA

Above and Left: Royal Sydney Golf Club maintenance staff had their work cut out following a wet second round of the 2008 Australian Open. The course copped 46mm of rain which forced a premature end to round two. Heavy spectator traffic meant that paths cut up severely while staff had to clear surface water off low parts of the course, in particular the 18th fairway

The NSWGCSA board met on 23 February at Magenta Shores Golf and Country Club. Not much has been happening with all current board members ensuring that their golf courses are still alive during these trying periods.

Planning for the year ahead has progressed well and our main focus will be on ensuring good representation and support at all NSWGCSA future events. We are also looking at ways of improving the communication and involvement between all golfing associations, including the likes of general managers and turf technicians.

Looking back to December, our annual harbour cruise on the best harbour in the world was a huge success and once again I would like to thank our sponsors Dad & Dave's Turf Supplies, Vermont Sands and Environmental Business Solutions.

Congratulations also must go to John Odell, his course maintenance staff and Royal Sydney Golf Club for once again holding another successful 2008 Australian Open in somewhat trying conditions. After relatively benign weather for Thursday's opening round, play had to be suspended after rain set in during the second round on Friday.

That afternoon and evening the course copped 46mm with staff called in just after 4am on Saturday morning to pump out bunkers and get the course ready for the completion of the second round. Conditions on Saturday couldn't have been any different with high humidity and temperatures soaring into the mid-30s.

The next NSWGCSA event is the Rube Walkerden Golf Day to be held at Monash Country Club on 25 April 2009. This day is only open to members of the NSWGCSA so please ensure that your membership has been renewed. Our popular annual Ambrose event returns to The Vintage for the second time on 15 June. This event was a real success last year and we look forward to our return trip to Steve Harris' neck of the woods. Please keep an eye out for flyers for these events and ensure that you register and have payment complete to guarantee your position.

Above: Just another day's work for the Royal Sydney divot bombing crew

Bottom left: The fairway units go to work on the par 4 12th following the third round

CRAIG WRIGHT
PRESIDENT, NSWGCSA

GCSAWA

First I would like to wish everyone a wonderful and prosperous 2009 and hope all goes well throughout the year. I would also like to thank all our trade members who sponsor our association every year for their ongoing support. Please support these trade members you see advertised with us as their contributions have helped to keep our fees the same for the past 10 years.

Divots has now undergone another facelift with the help of the AGCSA team to take our association's magazine to the next level. Please support the trade who support our magazine as without them Divots would be financially unviable. Any superintendents that haven't contributed to the super's update section please email me your contribution.

From 3-6 May the GCSAWA bi-annual state conference will be held at Margaret River with a fantastic few days of speakers and activities at the All Seasons Colonial Lodge. Numbers will be limited so ensure you have registered and secured your spot. Accommodation is priced on a twin share basis with single rooms available on request only at an additional $250 for the three nights.

Once again Rain Bird is our major sponsor and their support is greatly appreciated, along with Toro and Simplot. Glenn Cross (Mount Lawley Golf Club) has organised a fantastic conference with some exciting guest speakers and local speakers presenting an informative round of seminars.

Jeff Lane (remember him?) from Paradise Palms Country Club (pictured above) in Cairns is coming over to give an insight into the hurdles associated with leaving Perth and maintaining turf in the tropics, while Richard Chamberlain from Ross Watson Golf Design will examine bunker design and expectations that come with their maintenance.

Andrew Peart from the AGCSA will discuss bentgrass management in regards to dry patch, stem weevil control, nutrient management and maintenance, while local superintendents, assistants and apprentices will share information as well. All seminars will be part of the AGCSA Accreditation Programme with registration forms out soon.

The Golf Masters Cup is on again for 2009 with Simon Bourne (Cottesloe Golf Club) setting up a year of great golf at some magnificent courses. Please ensure you register for the six rounds throughout the year as well as the yearly events such as the Toro Cup, Management Challenge and the AGM golf event. Busselton, Sun City and Lakelands are a couple of the new courses added to the list this year. The Busselton day will also involve, for the willing, a stay over in Busselton and some possible fishing the next day.

The GCSAWA has decided that state memberships for individuals belong to the company they represent, so if a superintendent leaves their position then that membership belongs to the club and is taken up by his replacement. Please contact the association if you are unsure of your situation.

DARREN WILSON
PRESIDENT, GCSAWA

Introducing...

GRAND PRIX
High Performance Turf

Description: Grand Prix is best suited to installations on Sports Fields, Parks, Golf Courses and School Ovals.

Some recent Grand Prix installations include:

- Skilled Park – Gold Coast, QLD
- Sydney Stadium – Randwick, NSW
- Eastern Golf Course – Melbourne, VIC

Benefits:

- Rapid Growth Rate
- Low Seed Head Numbers
- High Wear Tolerance
- Low Water Requirements
- Excellent Colour
- Excellent Sports Field Surface

PBR

Grand Prix is protected by Plant Breeders Rights (PBR)

Eastern Golf Course

Warm Season Turf Conversion - line planting with Grand Prix Couch earlier this year.

Full cover being achieved on both fairways in between ten and fifteen weeks.

Queensland
Turf Force
07 5543 6090

Sydney
Dad and Dave's Turf
02 4572 3933
J&B Buffalo
0418 864 434
Millers Turf Supplies
02 4577 3621

Victoria
Evergreen Turf
03 5945 2100
Anco Seed & Turf
03 9782 2711

South Australia
Marne Valley Turf
08 8389 9303

BCI_J3974

GCSAQ

There is not a lot to report in sunny and wet Queensland at the moment apart from rain and grass which when you look at the rest of Australia makes us fairly lucky, although some of the rainfall has been excessive to say the least. It has been a tough summer for a lot of supers with low light intensity associated with the rain making maintenance of couch greens all the more difficult.

Jeff Lane at Paradise Palms Country Club has had to deal with one cyclone and just missed another while watching 202mm of rain fall in December, followed by 872mm in January. Remarkably 400mm of that fell in just eight hours on 8 January. A little further south and Duncan Lamont at Townsville Golf Club recorded a nine day run to finish off January with 20, 42mm, 12mm, 29mm, 18mm, 23mm, 26mm, 36mm, and 51mm collecting in the rain gauge. That was the lead up to Cyclone Ellie crossing the coast in early February when several hundred more dropped from the sky.

Just over the border at Coolangatta Tweed I recorded 155mm in December which included the best Christmas present of them all - 34mm on Christmas Eve!! January then followed up with 262mm. On two occasions I have had to pump my irrigation lake down to help the course drain. Even Charlie Giffard at Indooroopilly picked up 111mm in December and 63mm in January.

So with pretty much normal temperatures and all that rain you can imagine how much grass we have got up here and hence it has been a very quiet start to 2009 for the GCSAQ with heads down and the proverbial up in an attempt to keep up.

Darryl Edwards has left Hyatt Regency Coolum

The GCSAQ is a very keen participant in the annual Queensland Golf Industry Awards and we are proud to announce the following winners for 2008. The golf community of Queensland congratulates these very worthy winners.

Superintendent Achievement Award: David Brushfield (Nudgee Golf Club)

Superintendent Environmental Award: Charlie Giffard (Indooroopilly Golf Club)

Industry Recognition Award: Bill Heraghty

A couple of dates to mark down in your '09 calendars include the annual GCSAQ bus trip from 20-22 June which this year finds us heading to the north coast of NSW. We will be staying in Lismore on Saturday night and Byron Bay on Sunday. Golf will be at Chris Haselden's Lismore Workers Golf Club on Saturday, while on Monday we will tear up Shaun Cross's Byron Bay Golf Club. Yes, Skirmish will be available on the Sunday as will a game of golf at Ballina. The trip will be limited to the first 36 names to book so don't wait too long.

ChemClear has advised that a collection has been scheduled for Queensland during May. ChemClear is a national programme that collects and destructs obsolete ag and vet chemicals on behalf of the chemical manufacturing industry in Australia. ChemClear is managed by Agsafe Limited and is a not-for-profit service. Bookings are essential and can be made on 1300 008 182 or check the website out at www.chemclear.com.au. The booking line will close on 25 March.

To finish there has been a little bit of movement around the traps lately with Darryl Edwards succeeding Jeff Gambin at Gold Coast Burleigh. Indooroopilly assistant and former Mossman superintendent Brendan Clark has taken over the reigns at Mt Gambier Golf Club in South Australia, while after 29 years service at Redcliffe Golf Club, Ray Nicholson has resigned. Ray started as a 'bunker boy' then acted as mechanic before taking over the super's position. Unfortunately more valuable experience leaves the industry.

PETER LONERGAN
PRESIDENT, GCSAQ

SAGCSA

The SAGCSA executive is currently putting the finishing touches to the 2009 members meeting programme and a schedule of events will be mailed out in the very near future. We are planning a good mix of venues and speakers and we would like to encourage superintendents to bring additional staff members to meetings and benefit from the shared knowledge of guest speakers and superintendents. Last year's meetings were well attended and it would be great to see that trend continued.

Mal Grundy (meetings coordinator) does a wonderful job organising the meetings throughout the year. Mal has a major battle on his hands at Murray Bridge with only himself and one other employee yet he still finds time to assist the association. Mal has been a great ambassador for our profession over the years and he deserves a big pat on the back for all his hard work.

In the near future the SAGCSA executive committee will be discussing the pros and cons of holding an annual social function. We would welcome the thoughts of our members on whether this would be a welcome inclusion to our calendar of events. The direction of any social day would need to be balanced by cost and benefit to members which would include peer networking, stress busting and some good wholesome fun.

I was fortunate to attend the state superintendent association presidents meeting in early December which was held at Royal Sydney Golf Club. John Odell was a tremendous host and I take my hat off to him and his staff on the condition of the course which was in immediate preparation mode for the 2008 Australian Open. The AGCSA Board was in attendance as was the AGCSA staff. The attendees were briefed on topics such as state membership, environment and water initiatives and events and education. The AGCSA staff once again showed what a hard working and professional group they are.

I would like to close by wishing Scott Petersen all the best and to thank him for his contribution to our industry. Scott has played a significant role in lifting the profile of our industry and assisting its ongoing strength.

ANDREW BLACKER
PRESIDENT, SAGCSA

VGCSA

All Victorian superintendents are feeling the pinch this summer with record temperatures putting many facilities under intense stress. In late January the state baked through four consecutive days over 40 degrees and then on Saturday 7 February Victoria recorded its hottest day on record. All courses are feeling the strain of years of drought conditions as well as record high temperatures not experienced since the early 1900s. To exacerbate the situation only .05 mm of rain was recorded in Melbourne for January and we can only hope that autumn can relieve some of the pressure.

The first VGCSA meeting of the year was held on 23 February at Settlers Run. This education day was sponsored by Nuturf and the focus of the day was on management and communication with possibly the best panel that has been assembled for a VGCSA meeting.

Among the panel were Richard Forsyth (superintendent Metropolitan Golf Club), Allan Shorland (general manager Metropolitan Golf Club), Brian Reiter (past captain Huntingdale Golf Club), Peter Furburough (general manager Cheltenham Golf Club), Michael Picken (past superintendent Riversdale Golf Club) and Graeme Grant (past superintendent Kingston Heath Golf Club and former board member Woodlands Golf Club). All discussed their experience in management and communication skills at various levels of golf club management and I would like to thank them all for their wealth of knowledge and dedication to the turf industry.

Thanks to Settlers Run superintendent John O'Neill for his support on the day for those who played golf all commented on the quality of condition the course was presented. Congratulations to John and his staff. Many thanks must go to Gavan Hegan from Nuturf for sponsoring the day. Nuturf has been a long-time sponsor of VGCSA education days and we appreciate their support.

With the country meeting just around the corner at Leongatha Golf Club on 5-6 April we encourage all members to get together and support this meeting which is sponsored by Globe. Host superintendent Steve Earle, together with his sole assistant Dylan McMeekin, has made several changes to Leongatha in recent times with a couch conversion programme, bent greens, rebuilding tees and practice greens. This has all been achieved on a low budget and I think all members will be surprised with the excellent condition and quality of this picturesque country course. I look forward to seeing you there.

MICHAEL FREEMAN
PRESIDENT, VGCSA

Top: Leongatha Golf Club will host the VGCSA's country meeting from 5-6 April

Above: Leongatha Golf Club course superintendent Steve Earle

TGAA ACT

I trust everyone enjoyed the Christmas/New Year break although our jobs often don't allow for much time to be spent away from work. The heatwave gripping the nation's south has not been as severe in the national capital. The consecutive days of 40 plus degrees have made the job of greenkeepers a difficult one but the weather conditions are affecting more than just our industry as has been evidenced by the destruction in Victoria.

Local water supplies benefited from good December and January rainfall (about 170mm) but this has been trumped by warm windy weather which has hit the region at times. We are yet to see significant rain events to ease the current water restrictions but I think I can speak for most when I say we are all endeavouring to monitor and use water more efficiently.

The 'dirty' work on the couch trial I've written about in previous reports is complete and now under the watchful eye of Royal Canberra's Mick Waring and TGAA committee. Trent Fraser will be making regular trips to monitor the progress of the trial as part of his thesis work. It was a great effort by all involved in getting the trial underway after what was a pretty shaky start.

By the time this edition goes to print the Living Turf Apprentice Award will have been decided. The winner was to be announced at a special function at Queanbeyan Bowling Club on 17 February. Four students were interviewed for the award and all performed well in the interview process. Congratulations to the guys on their nominations.

The TGAA Golf Day has been set for Thursday 7 May at Gold Creek Country Club. TGAA committee member and Gold Creek superintendent Scott Harris will no doubt organise another fantastic day so pencil it in the diary now. The annual seminar will be held on 29 July. Speakers and topics are being finalised and will be published in upcoming reports.

BROCK WESTON
COMMITTEE, TGAA ACT

STA NSW

The Sports Turf Association of NSW is planning for another big year in 2009 with our first event, our annual golf day, being held on 17 March at Magenta Shores Golf and Country Club on the NSW Central Coast.

The day will include a presentation by the course manager and 2008 AGCSA Claude Crockford Environment Award winner Kenton Boyd who will discuss environmental issues faced at Magenta. Booking forms are available on the STA NSW website.

The 2009 Sydney Sports Turf Seminar and Tradeshow will be held on 21 April at Ryde TAFE and we have a great line up prepared for the day. This year delegates will have the option to attend specific talks for either golf/bowling greens or cricket/sportsfields and also a management stream.

Magenta Shores will host the STA NSW Golf Day in March

Earlier in the year we launched our first "Men of Turf 2009" Calendar and we have had some very positive feedback. It was great to show the guys in the industry enjoying what they do and exposing a more laid back view of our industry! Plans are underway for an even bigger and better 2010 version.

Once again we have some great support from our sponsors and we appreciate their time and effort in helping to develop our association. Keep an eye on our website for all the latest STA NSW news and event information - www.sportsturf.asn.au

GRAEME LOGAN
PRESIDENT, STA NSW

TGAA VIC

Well, here we go again with another year of potential agony and disappointment which comes with uncertain weather. After great showers in December 2008 where the state recorded 80mm-plus, the gods have sent the rains across the northern parts of the country leaving Melbourne just 0.8mm for January. Combine this with super high temperatures for January in most of the southern states and its easy to see why agony and frustration are the main emotions being felt throughout the turf industry.

With all our sports fields and turf areas in such a poor state, renovations will be very costly and time consuming this year. I would make a suggestion to all members that they start to prepare a rough budget for expected renovations. If some members find it a bit overwhelming to come up with a works programme to cover all the required renovations, the TGAA has lots of highly qualified and experienced people to help you set up a simple spreadsheet to get started with.

If we all start now to address this issue, we can be informing our places of employment that, hey, we need a bucket of money to resurrect our turf areas. The companies will appreciate the positive forward thinking. Please don't forget that there is a lot of help and advice out there and all you need to do is ask for help if things get too tough.

By the time this goes to press we will have issued the first of the TGAA Victoria accreditation certificates through our programme. I urge members to forward their application (from the TGAA website) to the office and get your accreditation underway.

Upcoming TGAA VIC events include the Regional Seminar in Morwell on 4 March, Bursars Day at the Peninsula School in Mt Eliza and the annual Cricket Wicket Seminar at the MCG on 24 June. Please see the website for details www.tgaa.asn.au Hope to see you all during the year at one of our events or as the weather improves as well.

ROBERT SUNDBLOM
PRESIDENT, TGAAVIC

TGCSA

Just like our northern neighbours, summer began with cool to mild conditions but hit with record-breaking temperatures at the end of January.

The highest temperature recorded in Tasmania was 40.8 in 1976, but this was smashed twice during the last week of January and now stands at 42.2. That coupled with single figure rainfall readings for a lot of areas around the state for January has made it tough going for superintendents and turf managers. All clubs are struggling with water supplies and are doing their best to nurture their courses through summer.

It would be great to see a large turnout of Tasmanian attendees at the 25th Australian Turfgrass Conference and Trade Exhibition in which will be held in Hobart from 13-17 July. There is a substantial discount for early registration so now is the time to put your proposal into your board to attend this conference. The last time the conference headed our way was Launceston in 1992, so don't miss this great opportunity while it is so close to home.

The next TGCSA meeting is a split regional meeting, with one in the north of the state and one in the south on 18 March. This is a new initiative to make it easier for our members to attend meetings during this busy time. Also, the format will be condensed and the meeting will run from 11am to 3pm to enable work to be carried out prior to and afterwards.

A couple of superintendents from your area will give presentations on items from their courses on various topics. A flyer will be sent out closer to the time with all the details. Please show your support and RSVP as soon as possible so that catering can be organised.

STEPHEN LEWIS
PRESIDENT, TGCSA

Rooted in Solutions

Growing turfgrass is a science. Maintaining it in formidable conditions is an art. The stress of extreme mowing heights, suffocating heat and humidity, shade, water and nutritional challenges makes your turfgrass dependent on you for its very survival.

And this is where Floratine shines. Our patented, first-in-class foliar and soil-based technologies maximize nutrient uptake when your turf, and budget need it most. The finest ingredients in the world ensure that your turfgrass will conserve precious energy while retaining vital nutrients.

Floratine's highly trained distribution network, spanning 30 countries, provides you with the tools to keep you and your turfgrass rooted in solutions.

Visit our award winning website to learn more about our solutions and find a Floratine distributor near you.

www.floratine.com

Applied Agronomics Australia
(VIC/TAS): 0421 418 595
Bio Turf Australia
(SA/WA/NT): 0417 729 870
Turfcare NSW (NSW/ACT): 0425 280 300
Superior Turf Solutions
(QLD-north of Brisbane River):
0419 757 863
Turfcare Solutions
(QLD-south of Brisbane River):
0425 280 305

FLORATINE

LOWARA

"The growing-in phase of a new golf course is critical and requires detailed planning, particularly when it comes to irrigation.
When the new Settlers Run Golf Course at Cranbourne was in the early stages of planning we had no hesitation in recommending a Lowara pumping system because of its better control, long term reliability and ease of maintenance.
The Settlers Run pump installation incorporates 4 variable speed Hydrovars which are uniquely linked to Toro Irrigations' Sitepro software which delivers to the Superintendent precise information on the performance of the total pumping system, which is absolutely critical to the grow-in phase.
Combine that with Brown Brothers' exemplary after sales service and Settlers Run couldn't be in better hands."

Brendan Graham, A&M Watering

How the Hydrovar reduces energy consumption.

Most applications involve the pump operating either along its full speed performance curve or the pumps performance is throttled or regulated by a valve. The Hydrovar eliminates these operating methods by regulating pump speed and hence output to match the system demand. This saves wasted energy traditionally lost in these conventional pump systems. Energy savings of up to 70% can be realized. (figure 1)

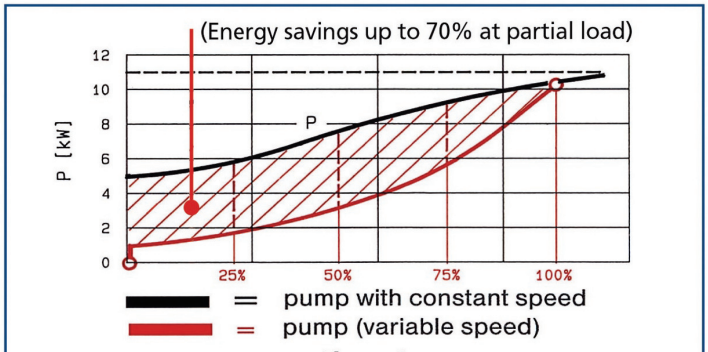


Figure 1

What is Hydrovar?

Hydrovar has gained a reputation as THE pump mounted microprocessor pumping system controller. But it does much more than just change motor speed.

It actually manages the performance of the pump to match a wide range of system conditions and requirements.

Hydrovar is fully programmable on site as it incorporates the microprocessor and the variable drive in one compact and unique package

How Hydrovar reduces maintenance cost.

Hydrovar software is designed specifically for centrifugal pump operation, control and protection. Hydrovar can thus be setup to protect the pump from operating under various unfavourable conditions eg. cavitation, operating against closed head, low NPSHa or operation past a pumps maximum flow rate. Hydrovar will automatically shut down and alarm if adverse conditions occur.

Hydrovar provides the Golf Course Superintendent with the flexibility of watering required with substantial savings on installation, power usage and maintenance. For details about the experience of some of Australia and New Zealands most prestigious Golf Clubs who have installed Hydrovar pumping systems, contact the Lowara distributors nearest you.

What is Flowlink?

TORO

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

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

All these parameters are displayed on the central irrigation control computer

Brown Brothers Engineers Australia Ltd

Christchurch
Phone (03) 365 0279 Fax (03) 366 6616
Auckland
Phone (09) 525 8282 Fax (09) 525 8284
Melbourne
Phone (03) 9793 9999 Fax (03) 9793 0022
Sydney
Phone (02) 9671 3666 Fax (02) 9671 3644
Brisbane
Phone (07) 3200 6488 Fax (07) 3200 3822
Email info@brownbros.com.au
Web Site www.brownbros.com.au

Delivering Pumping Solutions®