WINNER OF 8 AWARDS AT THE ANNUAL TOCA INTERNATIONAL COMMUNICATORS CONTEST



# India inspires 2007 GCS&MAI seminar

MANAGEMENT

**Research** Couch wear tolerance Organic matter removal

# River Murray courses fight for survival

**New South Wales** 

Albury

wan HiN

South Australia

Victoria

Murray Bridge Lake Alexandrina

olwa

The Pulse Bunker battles



Nothing cools the burn of heat stress better than Perk Up. Developed from Floratine Technology<sup>™</sup>, Perk Up includes calcium, carbohydrates and natural compounds targeted to treat stress-induced deficiencies in your turf.

Perk Up is university tested and field proven to alleviate heat stress by aiding respiration, while promoting wilt resistance and recovery, cellular strength, root growth and reduced senescense for optimal plant health.



Find out more about Perk Up, as well as the rest of the Floratine product line at www.floratine.com. Paul Dugmore O: + 61 8 8556 8736 • M: + 61 417 729870 • E: pdugmore@floratine.com

#### 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

President: Jeff Gambin Directors: John Odell Allan Devlin Pat Pauli

General Managers Scott Petersen (Business Development, Communications and Membership) scott@agcsa.com.au

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

Inquiries and 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 andrew@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



Know-how for Horticulture™

Copyright © 2008 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.

#### SUBSCRIPTION FORM

WINNER OF 8 AWARDS AT THE ANNUAL TOCA INTERNATIONAL COMMUNICATORS CONTEST



#### I wish to apply for:

One year's subscription to Australian Turfgrass Management (6 editions per year)

DNE COPY PER EDITION	\$55.00	
D/S ONE COPY PER EDITION	\$76.20	
TWO COPIES PER EDITION	\$86.00	
THREE COPIES PER EDITION	\$130.00	

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

Name:	
Company:	
Postal Address:	
Town/Suburb:	
State:	Postcode:
l enclose cheque for (amou	nt):
Please charge my credit ca	rd:
MasterCard	Uisa
Card Number:	
Expiry Date:/	
Cardholder Name:	
Address:	
Signature:	
Please send me more	e 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
	Prices include GST.



#### **COVER:** Lake Hume

Holding a capacity of over three million megalitres, Lake Hume, just east of Albury, is one of the main engine rooms regulating the flow of water along the River Murray. With prolonged drought impacting across the country, the Murray-Darling system is feeling the pinch, with Lake Hume running at just 25 per cent capacity with the main irrigation season barely underway.

> Photo by: Brett Robinson Graphic by: Jo Corne



#### Running on empty – making ends meet on the Murray

6-20

The River Murray has played a huge role in the development of Australia as a nation and today it remains as one of the major arteries keeping the heart of Australia pumping. That is under threat, however, as prolonged drought takes its toll on the entire River Murray system. Record low flows along the river have had a huge impact on irrigators with allocations in many cases being slashed to zero. For the many golf courses along its length, from South Lakes Golf Club in Goolwa to Thurgoona Country Club in Albury, the battle for survival has stepped up a notch in recent times with many being forced to seriously evaluate where their water is coming from. In this exclusive look, ATM gauges just how Murray supers are coping in these challenging times and discovers that while some are doing it tougher than others there is a common resolve to get through the hard times as well as be proactive about safeguarding their club's future.

38

#### Subcontinent sojourn

ourn 22-26

AGCSA president Jeff Gambin, along with AGCSA general manager John Neylan and NSW Golf Club superintendent Gary Dempsey, were invited to attend the Golf Course Managers and Superintendents Association of India's annual seminar last October. As well as encountering some pretty interesting cuisine, they also discovered a passionate group of superintendents eager to improve their skills and knowledge.

#### OPINION

The Pulse

What do superintendents really think about bunker maintenance? Got a spare couple of hours? ATM condenses the opinions of five leading superintendents to determine whether one of the game's quintessential components is still what it was originally designed to be – a hazard.

#### RESEARCH

#### Multi-use stadia workshop and Cynodon wear tolerance trials 40

Turf managers from Australia and New Zealand converged on Suncorp Stadium and Redlands

Research Station late last year for the inaugural multi-use stadia workshop. As part of the twoday gathering, they were invited to evaluate plots at Redlands where the QDPI&F is conducting couch wear tolerance trials.

#### Cultivating to reduce organic matter 44

US researchers conducted studies to determine how cultivating a sand-based putting green with various aggressive verticutting and core aeration treatments affected rootzone organic matter content and turf.



ATM stopped by Huntingdale Golf Club before the second round of the 2007 Mastercard Masters to snap superintendent Michael Freeman and his crew in action.



 

 TOW A TARP
 CRICKET PITCH EQUIPMENT www.mentay.com.au
 SIGHT SCREENS

 ROLLERS
 Image: Comparison of the second se



#### WATER Clubs reap round three grants

Over 100 golf courses received more than \$5.4 million in the latest round of the Federal Government's Community Water Grants scheme. ATM looks at some of the big winners.

56

#### **IN EVERY EDITION**

Foreword Thinking	4
AGCSATech Update	32
Tech Talk - Helminthosporium	36
The Pulse	38
News	52
Around the Trade	54
Turf Technicians	58
State Presidents' Reports	60

Contributors to Australian Turforass Management Volume 10.1 Nathan Bennett (The Sands, Torquav) Peter Boyd (NZGCSA) Steve Burchett (Portarlington GC) Rod Cook (GCSAQ) Mark Everingham (Royal Adelaide GC) Leith Fletcher (South Lakes GC) Russell Fletcher (The Lakes GC) Michael Freeman (VGCSA) Mal Grundy (Murray Bridge GC) Darren Harvey (Corowa GC) Justin Haslam (TGAA ACT) David Hastwell (Barmera GC) Tim Hicks (Thurgoona CC) Andy Hugill (NSWGCSA) Andrew Johnson (Rich River GC) Tony Johnston (Cobram-Barooga GC) Jeff Kaines (Royal Adelaide GC) Doug Karcher (University of Arkansas) Josh Landreth (University of Arkansas) Dr Don Loch (QDPI&F) Stephen Lewis (TGCSA) Keith McAuliffe (STI) Matthew McLeod (Tocumwal GC) Aaron Miller (Howlong GC) Phil Moylan (Melville Glades GC) John Neylan (AGCSATech) John Odell (Royal Sydney GC) Sam Olah (NSWTETA) Andrew Peart (AGCSATech) Mike Richardson (University of Arkansas) Matt Roche (QDPI&F) Greg Stringer (VTETA) Rob Sundblom (TGAA VIC) Mick Swanwick (Yarrawonga and Border GC) Rod Tatt (Cranbourne GC) Kym Traeger (Berri GC) Darren Wilson (Wembley Golf Complex)

# double figures

ou might not believe it, but this January-February 2008 edition marks the start of the tenth year that Australian Turfgrass Management magazine has been in existence. Hip, hip, huzzah! Where's the cake?!

Looking back at the very first edition – February-March 1999 – which many will remember carried that stunning cover of a green and golden bell frog perched on a golf ball (still one the magazine's best covers, even though I had nothing to do with it), there are surprisingly many similarities to the edition that you currently hold in your hands.

While a few superintendents and turf managers who appeared in that first edition look decidedly fresh-faced (I won't divulge names but most of them are still kicking around now; you know who you are), some of the articles carried themes still highly relevant today. The push for irrigating with recycled water had well and truly gained momentum, while environmental management – in this case the conservation of the green and golden bell frog – was demonstrating the integral role golf courses can play in preserving native flora and fauna.

As ATM has matured over the years, it has started to receive recognition on a global stage. In the past two years it has collected a number of awards from US-based turf industry communication association TOCA, which is more a reflection of the great stories and characters the industry here generates. Just as this edition was going to press, ATM received further accolades, this time winning the best feature/story in a trade publication category at the Australian Golf Media Awards held during the Australian Open. The winning article was the lead story in Volume 9.2, 'Combating the drought'.

While Australian Turfgrass Management magazine has come a long way since that first edition, particularly in terms of its design, there is one common thread throughout all of the previous 53 editions – you, the superintendents, turf managers, assistant supers, groundsmen, apprentices and trade.

Without the contributions and support from the industry this publication wouldn't be where it is. Such support is again evident in this edition and you only have to take a look at the list of contributors directly to the left of this column to see the names of many turfies who have done their bit in weaving this edition together.

We kick off the tenth year by taking an in-depth look at how superintendents along the length of Australia's iconic River Murray are bearing up. As many will be aware, irrigation allocations have been sliced back to a pittance which has forced superintendents to make serious adjustments to water management practices as well as seek alternative sources. As you will read, some are well and truly between a rock and a hard place, while others are in the process of undertaking major projects to secure their club's most precious asset.

Elsewhere in this edition, The Pulse throws up an old chestnut for superintendents – bunker maintenance. Bunkers have become a major maintenance headache and the lengths superintendents now go to in preparing a 'hazard' is quite incredible. Take Huntingdale Golf Club superintendent Michael Freeman for instance. Having recently hosted the 2007 Mastercard Masters – see the pictorial spread in the latter half of this edition – Freeman estimated that if he added up the time each crew member spent preparing bunkers each day of the tournament, the total would be around 90 hours! Fair enough it was for one of Australia's major tournaments, but even as Freeman comments, "If you are asking me have we lost the plot with the preparation of a hazard, yes we have."

Enjoy the read and I hope all in the industry have a great start to the new year.

Brett Robinson Editor



#### JOHN NEYLAN AND SCOTT PETERSEN, AGCSA JOINT GENERAL MANAGERS

t was back some 30 years ago when the idea of a national association servicing the needs of Australian golf course superintendents was initially discussed. At the time there were two schools of thought as to what form the organisation should take. One group wanted a union to help facilitate better wages and conditions, while the other wanted a fraternal organisation to meet, develop friendships and share ideas and experiences. The AGCSA as we know it today is based on strong fraternal relationships.

Several recent experiences have got us thinking about the AGCSA and what it represents. In particular, is it still a fraternal association or a union? The question has been asked of the AGCSA on more than one occasion, "Are you a union?" One golf club manager was reluctant to pay the course superintendent's membership fees because the club does not pay union fees and in his opinion the AGCSA sounded more like a union.

When recently attending the picket line at The Golf Club, St. Andrews Beach following the unceremonious dismissal of staff, it was of great interest to observe the trade union (Australian Workers Union) organisers in action. They are confrontational and have a series of tactics available to them where they directly confront the employer in order to obtain justice and preserve workers rights. The dictionary defines a union as "an organisation of wage earners that is set up to serve and advance its members' interests in terms of wages, benefits, and working hours and conditions".

Alternatively, what is an association? One

definition for an association is "a group of individuals who meet for a common purpose". When we consider what a fraternal group is, it talks of "a group of people associated or formally organised for a common purpose and interest or persons of the same class and profession".

It is our belief that the AGCSA is strongly fraternal and based on the common interest of working with Mother Nature and sharing the experiences and challenges of preparing golfing surfaces over a range of environmental conditions and resources. As John Geary so aptly put it to the gathered throng at the gates of St. Andrews Beach, we (i.e. greenkeepers) are a conservative group and it is often the love of the job that keeps greenkeepers involved even when commonsense says it is time to leave.

The greenkeeping profession is not just a means to an end but a strong connection to the land. It is this challenge of working with nature that brings like-minded people together to discuss their successes and failures.

Over the past few years, as the AGCSA has worked with new superintendent associations in Thailand and India, there is no doubt that the primary aim of these associations is to bring like-minded people together as a means of improving themselves professionally.

As with AGCSA members, there is more discussed over a beer and a meal than in any of the formal sessions. It is the coming together and the forming of friendships that is most important. At the Cairns conference it was the open forums involving fellow superintendents that generated the most interest and discussion



and reinforces the notion that supers like to hear from fellow supers.

As an association there is always the challenge of remaining relevant and to respond to changes. It is not so much about protecting working entitlements but more about assisting golf course superintendents and providing them with the tools that allow them to better do their job.

Over the past 12-18 months the AGCSA has improved its communication and information to members through ATM, The Cut and the website, launched the environmental initiative, become a key member of the Australian Golf Industry Council, developed HR and management templates, developed an induction manual for golf club committees and worked through the minefield of what were the IR laws. In addition it provides an independent technical and diagnostic service.

It is the hope of our association that we can continue to raise the profile and importance of the superintendent profession.



#### SPORTS TURF DRAINERS & CONSTRUCTION SPECIALISTS

SLIT DRAINAGE SAND GROOVING LASER LEVELLING/GRADING LASER CONTROLLED TRENCHING

#### TURF DRAIN AUSTRALIA

Phone: Fax: Mobile: Email: Website: NSW (02) 8117 8100 VIC (03) 6328 1522 (02) 8117 8101 0418 261 089 turfdrain@bigpond.com www.turfdrain.com.au



# BE PREPARED FOR THE EXTREMES OF MOTHER NATURE



Because both drought & excessive rain cause greens to suffocate... you must open them up

IRM Inc. . . . Innovative Turf Technology

toll free: 888.576.7007 international: 1.336.354.1243 sales@jrmonline.com When Quality Matters Choose JRM

#### THE BAYONET<sup>®</sup> SOLUTION FOR MANY PROBLEMS

- 4<sup>1/</sup>2" & 7" length with most mount sizes
- Holes stay open up to three weeks
- Maximum gas & water exchange
- The best solid tine for playability
- No negative effect on putting
- The surface area of a <sup>5</sup>/8" round tine with far less trauma
- The finest all-purpose tine available

#### JRM AUTHORIZED DISTRIBUTORS

AUSTRALIA - VICTORIA Applied Agronomics - Jim Brennan (0421) 418 595 jim@appliedagronomics.com.au

NEW ZEALAND C. Brent Baber Turf Equipment Co. P.O. Box 72-728 Papakura 2110 New Zealand 64 09 294 6040 AUSTRALIA - QUEENSLAND Redwood International - Ian Leonard PO Box 985 Maleny, QLD 4552 07 54 999 031 Fax 0419 757 863 Mobile

#### MALAYSIA NUAIM CORPORATION (M) SDN BHD

No 14 Jalan P10/19, Section 10, Selaman Industrial Park, 43650 Bandar Baru Bangi, Selangor, Malaysia +603-89211596 AUSTRALIA - NEW SOUTH WALES Turf Technology Systems - Mark Wiggins P.O. Box 8272 Werrington County NSW 2747 1800 250 258

**THAILAND Raun Interprise - Thorbjorn Raun** 135/75 Patak Villa.Rawai Phuket 83130 66 76 281 203 South Lakes Golf Club superintendent Leith Fletcher hasn't been able to draw water from the River Murray since March 2007. River levels are so low that the foot valve is over a metre out of the water and salinity levels upwards of 9000ppm have rendered the water useless for irrigation

The River Murray is unquestionably one of Australia's great natural icons. Stretching 2530km from the Great Dividing Range in NSW to the mouth in South Australia, the River Murray has provided a livelihood for millions. In recent times. however, the worsening drought has put a huge strain on the system and those who draw water for irrigation. In the first part of this extensive feature on the River Murray, ATM looks at how three golf courses - South Lakes, Thurgoona and Cobram-Barooga, who have relied heavily on the Murray for their survival, are faring in these difficult times.



# Running on empty making ends meet on

t's just as well that South Lakes Golf Club superintendent Leith Fletcher can manage a joke or two given the situation that currently confronts him and the club. Given the last couple of years at the South Australian club, which has been Fletcher's home his entire nine-year turf management career, you would need a sense of humour given the predicament the club faces in terms of its water resources.

Situated in Goolwa, which is tucked in the south western corner of Lake Alexandrina, South Lakes is literally between a rock and a hard place. As the last official pump to pull water out of the River Murray system, more than most it has felt the acute pressure of the drought which has reduced the river to a mere trickle and sliced irrigation allocations back to almost nothing.

As Fletcher bluntly puts it, South Lakes is at the arsehole of the Murray. Go any further and you hit the system of barrages which prevent salt water intruding back through the river mouth and into the lake. But as if current allocation restrictions weren't enough – the club's normal allocation of 136M was sliced to just 17M this financial year – there is one other slight problem; they can't use any of it.

River levels are so low that the club's foot valve, located at the nearby marina, is over a





# the Murray

metre out of the water. Even the local yacht club has been forced to dredge its marina. Then there are the salinity levels which have effectively rendered the water useless.

When Fletcher measured levels prior to ATM

visiting in early November, they were hovering around 9000ppm for the third consecutive month. In fact, Fletcher stopped pulling water out of the Murray back in March 2007 when salinity levels started hitting 2500ppm. Over the past 12 months the lowest that salinity levels have dropped to is 1800ppm, compared to the year before where the highest was just 800ppm.

Adding further to the predicament is the lack of feasible options South Lakes can pursue to secure alternative water sources. Whether it's due to cost, lack of infrastructure or the location of the course, there is nothing in the immediate future which will turn the situation around. As Fletcher jokes, "There probably shouldn't even be a golf course here!"

To get by this summer, South Lakes has sold off its river allocation and has negotiated a permit with the local government to use mains water from the nearby Myponga Reservoir. As part of that permit, Fletcher can water greens and tees three times a week at night and handwater sparingly to his discretion during the day. While the greens and tees have relished the fresh water input, Fletcher knows that this is far from a long-term solution.

"To say we are in a predicament is an understatement," laments Fletcher, who took over as superintendent two years ago. "It can be a bit demoralising because there's not much you can do about it. Until the flows get back to the level they were, we won't pull anything out of the river. We still monitor the river levels each week in the hope that if we get



a flush of water under 2000ppm parts we can give the fairways a quick water.

"It's going to be an interesting summer. A few hot days back-to-back will really crisp the place up. We'll be doing a lot of split shifts and plenty of handwatering of greens. As for the rest of the course, we'll just have to let it suffer a little. If the tees have to go, they have to go. We've even gone to the extent of shutting off nine sprinklers irrigating greens surrounds which is two full greens worth of water each night.

"Our situation does give me a few nightmares and it's all that you think about. In my first year as superintendent we had a 100mm dumping across two days which flooded the course. Ever since then there has been a drought. We've had the two extremes so hopefully the coming year will be absolutely perfect; somewhere in the middle.

"Obviously the situation has forced us to seriously look at alternative sources and the club has been extremely proactive in searching for alternate methods of getting water to the course. We have come up with a water options report but a lot of that doesn't make for great reading. We've examined most avenues and they're all dead ends for various reasons."

Former South Lakes superintendent Les Lundstrom, who has clocked up over three decades at the club and is now Fletcher's 2IC, says in all his years there the situation has never been so bad.

"This is the worst I've ever seen it," agrees Lundstrom. "Back in the early days you would get your salty moments, like if there was a king tide or storm which pushed water over the barrages, but it never got to the stage where we had to stop pulling out of the river for this length of time."

It isn't for lack of trying that South Lakes finds itself in the predicament it is. Water has been the number one agenda item at committee meetings for the past two years and many reports have been tabled looking at solving water issues. The sad reality is they have been consigned to the bin.

Despite a number of small bores on the property in the past, studies have ruled out the option of groundwater due to quality and yield issues. A bore was sunk on nearby Hindmarsh Island to over 200m which produced nothing. As well, the risk of sinking a bore and not getting a strike would be very costly.

CONTINUED ON PAGE 9

As of December 2007, Lake Hume Dam was at 25.2 per cent capacity

# Going with the flow -Running the River Murray

he River Murray stretches 2530 kilometres from the Great Dividing Range in New South Wales through to the mouth at Lake Alexandrina in South Australia. Each day, River Murray Water staff "run the river" by deciding on releases from storages along the River Murray and lower Darling. The River Murray system has four major storages -Dartmouth Dam, Hume Dam, Menindee Lakes and Lake Victoria.

Water is released to meet the needs of irrigators and flows for South Australia within constraints such as minimum flow requirements, dilution of salinity, maximum rates of change of water level, and capacity of the river channels. Each day, more than 350 items of data are received from points along the river and tributaries to facilitate operation of the system.

The river can operate in three modes – supplying, storing, and spilling. 'Supply' mode occurs for most of the irrigation season, which generally extends from the start of November each year until mid May. During supplying mode operations, the flow in the river is set to meet the demands (including the entitlement flow to South Australia) with little excess. Operation in supplying mode includes the following considerations:

- Setting releases from each storage to meet downstream water supply requirements, river transmission losses and dilution flow requirements;
- Setting releases from Lake Victoria to supply South Australia's entitlement flow;
- Transferring water from the Menindee Lakes to Lake Victoria;
- Transferring water from Dartmouth Reservoir to Hume Reservoir;

- Making use of tributary flows;
- Limiting flows to within channel capacity, which varies along the system;
- Observing maximum rates of rise and fall of river levels set to minimise bank slumping and other problems;
- Maintaining minimum flows at key points in the system; and
- Making releases for environmental purposes.

'Storing' mode generally occurs during the winter and spring seasons, when the flows in the river are in excess of that required to meet diversions, water supply, and minimum flow requirements. 'Spilling' mode occurs when flow exceeds the river's channel capacity at a point as a result of runoff generated by heavy rain. The channel capacity varies along the River Murray (channel capacity downstream of Dartmouth Dam is about 10,000 ML/day and between Hume Dam and Lake Mulwala is about 25,000 ML/day).

#### CURRENT LEVELS

According to the latest figures released by the Murray Darling Basin Commission on 7 December 2007, the River Murray system was running at 20 per cent capacity, despite good rainfall during November. Of the two largest storage dams, Dartmouth was at 17.1 per cent capacity and Hume 25.2 per cent.

Murray system inflows through winter 2007 were marginally better than those received in 2006 (which was the driest year on record), but were still among the lowest on record. August and September were particularly dry.

In July 2007 the southern half of the Basin received average to above average rainfall, while the northern half of the Basin was below average. However, in August and September the situation changed with most of the Basin receiving below average rainfall.

Significantly, the upper catchments that feed the major storages of the River Murray suffered a severe rainfall deficiency. The Bureau of Meteorology (BOM) has stated that this is the first time in records dating from 1900 that an El Niño drought in the Murray-Darling Basin has not been followed by at least one three-month period with "above normal" (Basin average) rainfall by the end of the following winter.

The deficiencies have occurred against a backdrop of multi-year rainfall deficits and record high temperatures that have severely depleted water supplies. As a result of the below average rainfall in the main catchment area during August, Murray system inflows for August were only 360GL, which is well below the long term average of 1570GL. The dry weather persisted throughout September, with inflows of about 210GL, compared to the long term average of 1610GL. Monthly inflows have now been below average for the last 24 months.

After three very dry months, some relief came in November with rainfall levels well above average across most of the Murray-Darling Basin. While welcome, the November inflow to the River Murray of about 170GL was well below the long-term average of about 950GL due to the preceding dry conditions. However, the November 2007 inflows were more than double the 70GL recorded in November 2006. Total storage (including Menindee Lakes) at the end of November was 1885GL, or 20 per cent capacity, compared to 2435GL this time last year. Ju With the River Murray's major storage dams and flow regulators, like Lake Hume, at extremely low levels, the likes of golf courses further down the system such as South Lakes are feeling the pinch more than most

#### CONTINUED FROM PAGE 7

Class B water from the local treatment plant is currently contracted out for the foreseeable future (ironically to a turf farm) and even if some was available there is no infrastructure in place to get it to the golf club. Storage too is another big issue due to the course being at sea level.

Desalination was quickly ruled out due to setting up and running costs which were beyond the club, while tanking in water over the summer was going to set the club back about \$100,000. It even got to the stage where the committee made enquiries into artificial tees and greens! You can imagine Fletcher's reaction to that!

"We are really in a no-win situation at the moment," says Fletcher. "There's no other



way of getting water unless they put a better treatment plant in and that could be years away. None of the other options are feasible, whether it's in terms of cost, the by-products created, or where we are going to store it. There is nowhere we can build a dam above sea level, because as soon as we go down a metre we hit salt water.

"We just hope and pray that water

because it is our main source of water. We've gone to local government for help and that's how we've got the three days a week permit at the moment.

"Where are we going to be in the next 12 months? Well, probably where we are now unless it rains. We just need the rain to fall further upstream in the system. We're hoping



ACTIVE CONSTITUENT: 250 g/kg RIMSULFURON

For the control of Winter Grass (*Poa annua*) in Couch

THE NEW SOLUTION FOR WINTER GRASS CONTROL

The new herbicide Turf Culture Coliseum Herbicide is now available for selective post emergent control of Winter Grass (Poa annua) in turf.

- Post Emergent Control Coliseum is absorbed through the roots and shoots, and provides excellent post-emergence weed control.
  - Biotypes of Poa annua Coliseum is effective against both annual and perennial biotypes of winter grass.
- Overseeding/Soil Half Life 3 to 7 Days Coliseum allows over-seeding to occur 7-10 days after application.
- Excellent Turf Tolerance Coliseum does not injure or retard spring green-up in couch.
- Tracking & Lateral Movement To reduce the potential for tracking or offsite movement, short irrigation cycles are recommended just one hour after application and again if dew is present the following morning. (The first irrigation cycle should be applied prior to foot or machinery traffic through treated areas)



"Innovative & Professional Turf Products " www.turfculture.com.au Turf Culture Pty Ltd ABN: 38 117 986 615 PO Box 381 Brighton, Vic, 3186 Ph: 0413 587 682 Fax: 03 8621 0095 ver murray

Thurgoona Country Club superintendent Tim Hicks has been counting his blessings after the club sank two bores and struck liquid gold. Between them they produce 2.55M a week

and praying; that's all we can do. Here would be nice, but until it rains in the catchments, we're between a rock and a hard place."

#### **KEEPING THE FAITH**

Some 2000km upstream it's a very different story at Thurgoona Country Club. Situated just downstream from the engine room of the River Murray, Lake Hume, it is home to superintendent Tim Hicks, a country lad at heart who has grown up with the River Murray playing a major part of his life. Even now when he finishes up a day's work, he'll often stop by the river en route home for quick dip.

Born in the small NSW town of Berrigan before moving to a property bordering the river at Rutherglen, Hicks' formative years are full of fond memories swimming and skiing on the Murray with his mates and four siblings. As he says, "Some grow up on the coast and



the beach. The Murray is my beach; it's my backyard."

Like most who derive a living from the Murray, 32-year-old Hicks is only too familiar with how the current drought has impacted his 'back yard'. He can recall back in the 1990s water skiing on Lake Hume when it was at 100 per cent capacity and watching water tumbling in torrents over the spillway.

Visit Lake Hume today and it's a far different

Say goodbye to Corray Ripó

story. The main boat ramp at the Hume Dam runs almost 100m before hitting the water, while barely a trickle feeds what is supposed to be one of Australia's great rivers. The Hume is currently at 25.2 per cent capacity, and it shows.

Having been raised in a Catholic family, Hicks still retains his faith and will often "have a chat" with the 'boss' upstairs if the need arises. And given the situation at Thurgoona earlier in

Moncut<sup>®</sup> is a new generation fungicide that provides an effective tool in the management of Fairy Ring in golf greens.

- · Effective management tool for suppression
- · Low mobility in soils; unlikely to leach into ground water
- · Low toxicity to birds, earthworms, honey bees
- Easy to use formulation
- · Ideal for use in rotation with other fungicides, for resistance management

Moncut Fungicide is sold and distributed by Chemtura Australia Pty Ltd. For further technical information and supply, contact Jenny Haupt, Sales Agronomist Chemtura Australia Pty Ltd on 0427 013 665



® Moncut is a registered trademark of Nihon Nohyaku Co., Ltd.

# INTRODUCING THE NEW 2653B UTILITY MOWER



WITH THE REDESIGNED 2653B, YOU CAN TACKLE HILLS AND OPERATOR FATIGUE. An improved traction system design powers the drive system for hill-climbing power with surprisingly even traction. Operators get increased space between the seat and steering wheel, all with a clear view of every control. Add increased sound reduction and more accessible belts and fluid line and there's simply nothing out of play.

## See for yourself why nothing climbs like the 2653B at your local John Deere Golf & Turf dealer today.



Nothing Runs Like A Deere www.deere.com.au



Tim Hicks shows just how low the River Murray is a few kilometres downstream from Lake Hume

2007, the lines of communication have been well and truly open.

When allocations were announced at the start of the financial year, Thurgoona received just 20M of its usual 125M high security allocation, its only source of irrigation water for the Thomson-Wolveridge designed 18-holer, which included a re-credit from last year.

Usually upbeat, Hicks admits the situation facing Thurgoona back in July was "pretty grim", so the decision was made to fast track investigations into groundwater options, a considerable risk given that the area isn't known for producing high yielding bores.

The club bit the bullet and sunk two bores about 200m deep at a cost, including pump and power, of \$34,000 each (that doesn't include the water). They struck liquid gold and between them the new bores are now producing 2.55M/week with quality around 1000ppm.

The aquifer (015) is currently embargoed so no permanent transfer is allowed but the club is able to temporarily transfer groundwater from an existing licence holder. Currently a study is being conducted on the aquifer and once that is finished (sometime in the next 18 months to five years!) recommendations will be implemented which Hicks is predicting will more than likely mean a reduction in allocation. After that, permanent groundwater trading will reopen.





"It was a big risk to decide to sink bores but we went deep in the hope of hitting a fracture in the bedrock which we did both times. As it turned out it was money well spent. A private property owner not far from the course sunk a bore the same week as us and got nothing. If we hadn't have struck with those two...well, I don't even want to consider where we would be now!

"While their yield isn't huge it means I will be able to get through summer comfortably without touching the river allocation. We have only been watering greens and tees this year, but now I'm hopeful I can give the fairways the occasional drink."

As well as the bores coming online, Thurgoona is also set to benefit from a new housing sub-division to be built along the club's boundary. Approval has been given for an 8.3-hectare, 96-lot sub-division adjoining the 2nd and 3rd holes and the stormwater from that – an estimated 25M/year – will be piped into the club's irrigation dam.

There are also plans to develop land adjoining the 4th, 5th, 6th, and 7th holes with

Low river levels and severe reduction in allocations means golf courses are having to find alternative sources for irrigation water a similar amount in run-off. That potential 50M, combined with 130M in bore water along with river allocation would set Thurgoona up well, virtually eliminating the need to purchase expensive high security water.

Hicks is also pushing hard for the club to increase its current 30M storage capacity in the form of another dam or increasing the capacity of the existing dam, or both.

"This, in the long term, is a very important aspect of our planning so we can catch it when it's falling and use it when it's not," says Hicks. "We are also in desperate need of a new irrigation system to make better use of the water and apply it more evenly and efficiently. We've achieved the first step by improving our water situation, now we need to take the next step. I might have to put in another call to 'the boss'."

In the battle to make as much use of what little water he has, Hicks purchased a Terraspike XF earlier in the year which he says has made a significant improvement in water penetration. It has become the most valued piece of machinery in his new maintenance facility in the fight against the drought. Hicks has also been using Aquatain to reduce evaporation rates from the dam.

"With the new bores we have changed our situation for the better," reflects Hicks. "It won't enable us to water fairways at will but I am



hopeful I can give them the occasional drink. I have been applying gypsum to the irrigated areas (greens, tees and fairways) and I will continue to apply it annually. I also applied 2.5 tonnes of lime to the irrigated areas in October. We got 50mm of rain a week later and the couch bounced out of the ground.

"I use wetting agents monthly on greens from September to April with additional wetting agents used on dry spots as required. I hand water dry areas on greens and tees daily through the warmer months as required.

"I remain confident that we will manage, get through and go forward even in these trying times. You have to be proactive and research every option available to you. If I was sitting on my hands and doing nothing I would go insane stressing about the situation, but we are having a go and finding solutions.

"I am fortunate in the fact we have very progressive management and I have been well supported. Thurgoona has a growing population base and more and more people are enjoying our facilities. It's a real community atmosphere here, our members are great and they love the place. They appreciate what we are doing so that makes it all worth it.

"To draw a positive from this drought it has forced us to act to secure our future. If you look at the bigger picture, we really are in unchartered waters. It's easy to point the finger and blame. The reality is though if you're not part of the solution, you're part of the problem."

#### PERFECT TIMING

About 130 clicks downstream from Thurgoona and Cobram-Barooga Golf Club superintendent Tony Johnston could be forgiven for questioning his decision to re-enter the turf management caper at the beginning of last year.

After spending seven years as superintendent of the 36-hole facility between 1989 and 1996, Johnston spent a decade away from Cobram, including the last three years working on a farm growing cereal crops and lucerne. However, last February he was lured back to his old haunt and admits his timing couldn't be worse considering just how much pressure the club is under. Needless to say, Johnston likes a challenge and he certainly has his hands full.

"To put it simply, water is at the critical stage," says Johnston. "I am still very much reliant on river water as my primary source. In a normal year I would have 80M of high security and 360M of general security. A present we have zero allocation, but received 45 per cent back of our suspended water from last year which equates to about 36M. Compounding matters is the lack of rainfall and from July to September we had just 5mm of rain!

"With such a small amount of river water available we are also relying on a bore which was only put down 12 months ago. Because of restrictions on the depth we could drill, it can only produce 0.6M in eight hours. This means I have to watch my water very carefully trying to only use enough to keep the dams full.

"While the West Course is Legend couch, the Old Course is still a mix of common couch, *Poa annua* and rye. We were very keen to change all of the Old Course fairways to Wintergreen couch but this has been put on hold till next season due to the lack of water."

Not surprisingly Johnston has completely altered his watering practices. Soaker hoses are used on tees, greens are only hand watered, travelling irrigators are in operation on the fairways with the automatics getting a run just once a week. The maximum amount of water Johnston is trying to use is 700,000 litres a night, which as any turf manager will know is very little for a 36-hole facility.

"It is going to be a very tough summer," predicts Johnston. "Long hours and having a good staff which you can rely on to do the right thing is going to be very important. At the moment you can buy water for \$1100 a megalitre which is beyond most clubs. To be able to afford that you would need to double playing numbers to recoup your outlay.

"Having said that if it came down to just



Monthly inflows into the River Murray system have now been below average for the past two years

keeping your greens alive, you would have no choice. The vertidrain as well as wetting agents are going to be even more important tools rather than just throwing water on.

"I still feel that if we are to get a wet winter next year we might get our high security water allocation next year, but if there is another dry winter then there would be little chance. Until the dams at Dartmouth and Hume are 100 per cent full I fear we will never get a complete allocation again."

While the immediate future is set to be tough for Johnston and his crew, there is some light at the end of the tunnel. The club is looking to build a dam to catch stormwater from the Barooga township which in a normal rainfall year could generate about 40 megalitres. As part of this project, the club was successful in the third round of the Federal Government's Community Water Grants scheme, receiving \$48,000.



Looking at the wider picture, Johnston has some very firm ideas about the current situation and what could be done to remedy it.

"Having worked on an irrigation property growing cereal crops and lucerne for the past three years, I know now that farmers are also very reliant on the river as well," says Johnston.

"Most irrigators now really must look at what they are growing and change their practices to suit the climate. We should never allow big properties to drain water the way they do for crops that should never be grown in this country. Every town should be on permanent restrictions. As supers we know that your house lawn will survive on one watering a week!

"I am lucky to have a wife and family that understand what I am going through and are very supportive. Getting up at all hours of the night changing hoses and making sure that the pumps have come on and the sprinklers have gone off when they are supposed to can get very draining on a relationship.

"I hope that all supers along the Murray stay strong and get through this period as it will rain eventually. I will say this – don't be afraid to ask for help as there are plenty of guys out there who are in a similar situation to talk to if anything is troubling you."

Footnote\* Just as this edition was going to press, river allocations had been increased. Goulburn-Murray Water raised allocations in the Murray system from 26 per cent to 32 per cent of high security allocation, while as of 14 December allocation was increased from 22 per cent to 32 per cent in South Australia.



# CANE-IT Support Superintendents and Grounds Staff -The Heart of the Golfing Industry ADVERTORIAL

Maintaining a golf course today is a huge task that involves huge costs in course upkeep while complying with environmental standards and budgets. We can safely say that without the effort and hard work applied by our course superintendents and grounds staff, no one would be playing golf...no argument...**they are the heartbeat of the golfing industry.** 

Believe it or not, the golf tee has always been an enormous problem for ground staff to contend with. Most tee manufacturers have never considered or appreciated just what is involved with course maintenance, providing tees in strange shapes and sizes that will eventually break and be left behind on tee off areas. The clean up is left for greenkeepers to worry about.

No consideration has been made as to what negative impact these tees may have on our environment (and this will continue to go on as long as they are made available for purchase)

During our research we discovered some rather alarming facts that need to be exposed not only to the course superintendents but also to the general public and Global Environmental Authorities. On our recent trip to China, we called in on a golf tee manufacturer and took pictures of the timber being used to manufacture timber tees. Due to a ban on timber logging in China for disposable timber items, manufacturers have had to source timber from other countries such as Burma which are illegally imported into China. Simply go to an internet search engine and type in: **ban on timber logging China**. The images displayed are from a pile of timber dowels ready for production into tees, which will be imported into Australia and other countries. This timber has never been treated for any diseases or infestation, it is simply turned into tees, covered with a gloss paint and sent here to RIP in our soil. Any fumigation process on these imports after tees are made does not penetrate the paint or the plastic bags they are provided in; once they break they will be buried in our soil taking together with any diseases they may carry with them.

Was anyone aware of this? This has been going on for quite a long time without anyone noticing and so the tee fragment problem extends even further and the risks on our environment are increasing. A huge amount of money is being spent on appropriate fertilisers to maintain healthy soil and yet this imported timber is what eventually finishes up in our soil, rather like a dog chasing its tail.

There is a very simple, sensible and justifiable solution to all of this... Place a ban on timber tees or encourage retail outlets to stop buying them from importers. In today's climate of environmental awareness, it is simply inappropriate to be using a valuable resource such as timber to make a disposable golf tee when alternatives are available; and we are not referring to plastic tees.

The best sensible cure for this is prevention.





# The Tee Greenkeepers Have Been Waiting For

#### Cane-It<sup>™</sup> will assist with course maintenance.

Plastic tees and wooden tees are responsible for tons of waste that will eventually be buried into our soil, becoming an increasing burden to both our greenkeepers and our environment.

Further problems arise as some manufacturers have started to insert steel components inside and outside of their plastic tees.

Cane-It<sup>TM</sup> tees are 100% biodegradeable, consisting of a fibrous grass like structure. After being mowed by the greenkeeper, they shred into fibres which in turn increases decomposition without damaging expensive mower blades in the process. This results in massive savings to expensive machinery

and assists in keeping the courses in pristine condition. The unsightly view of tee fragments that we have all become accustomed to will disappear.

Cane-It<sup>TM</sup> tees are a simple, common-sense solution to a massive problem.

What makes these tees even more unique is the impregnation of an organic formula consisting of minerals, nutrients and trace elements: during decomposition the fibres will assist with natural soil rejuvenation without compromising any turf management programmes in place. It's the tee greenkeepers have been waiting for.

Savings in maintenance and time, results in keeping with budgets allocated.

TRADE & SUPPLY ENQUIRIES: Ralph Lennan & Sandie Bisco Phone: +61 7 543 76900 or 1300 361 509 Fax: +61 7 543 76766 Mobile: 0400 928 505 Email: ralph@resort-sales.com.au sandie@resort-sales.com.au www.cane-it.com







Cane-It<sup>™</sup> bamboo tees







In this second part of a major look at how golf courses along the River Murray are bearing up in these drought-stricken times, superintendents Matthew McLeod, Michael Swanwick, Mal Grundy, Andrew Johnson and Kym Traeger give an insight into their current water situation.

# **River resolve**

#### TOCUMWAL GOLF CLUB

#### Superintendent: Matthew McLeod

The 36-hole Tocumwal Golf Club has been surviving on bore water only for the past couple of years as White's Lagoon (a major billabong fed by the River Murray) where our foot valve is located is virtually empty.

Water levels in White's Lagoon are just six inches and we would need at least three feet of water to enable us to draw water from it. The Murray needs to be 2.1m in order to flow into White's Lagoon and at present the river level is just 1.5m.

The club has a 325M groundwater licence and has brought an extra 150M so we can continue to fully water both courses this summer. When we did have access to river water, which was shandied with bore water, our general allocation was 345M and high security allocation 20M. A treated effluent which will be shandled with bore water. We received a \$50,000 grant from the Federal Government's Community Water Grants scheme to set up infrastructure for this. We will be able to take 80-140M per year.

In the long term, the club is investigating a number of options. We are looking at costings of desalinating some of the bore water to use on greens and we are also thinking about relocating the foot valve in White's Lagoon so we can at least get access to our river allocation.

#### YARRAWONGA AND BORDER

#### Superintendent: Michael Swanwick

The current water situation at Yarrawonga & Border Golf Club is reasonably promising for the oncoming summer. We have 45 holes (two 18-hole championship courses and an 'Executive' nine), croquet lawns and two bowling greens.

Tocumwal is set to go online with Class

Tocumwal Golf Club superintendent Matthew McLeod stands above the club's foot valve in White's Lagoon. The club hasn't been able to draw its river allocation for the past two years due to extreme low levels in the lagoon which is fed by the Murray

River allocations are not as abundant as would be in a normal year, but we currently have (mid-November '07) 392M of river allocation comprising of high security (55M), general security re-credit (147M) and temporary transfer purchased water (190M). The club has also revamped its two bore water pumping spear systems. Bore allocation on two licenses is 269M which can be taken from both bores combined in a 12 month period.

The club has relied on the river as its main water source for the past 50 years. In a normal year the club would use 550M per season, especially now all large turf areas such as fairways, intermediate roughs, tees and greens surrounds have been converted to Santa ana. Prior to the conversion, all the courses were a cool-season mixture which soaked up about 700M per season.

We have seen major cuts in river allocation over the last two seasons with a 52 per cent cut to all NSW irrigators last season, with very little general security given out in that year. This year again we have had only a small amount of high security allocated, no general security and only a re-credit of water which was taken away last year which has given us 147M. Luckily the club has spent approximately \$9000 on revamping both bores so that we could get access to the 269M allocated.

Over the past 12 months the club's water situation has been a very important and topical agenda item at golf club meetings, with many meetings discussing in depth current situations with water allocations or lack of allocation (06/07 season), exploring alternate water sources such as ground water, deep bores, stormwater harvesting and potential treated effluent use. At all times the club has kept club members informed via newsletters and information sessions.

The next 12 months I envisage will be again be very cautious in regards to monitoring water use and rationing out available water recourses to get the best possible results. I hope that the next autumn, winter, spring seasons produce good rainfall to help fill the Hume and Dartmouth as I can see that by the end of the 07/08 irrigation season these storage facilities will be extremely low.

We will be concentrating water resources on priority areas such as greens, tees and fairways. Hand watering has become the mainstay of keeping greens in good condition. Other areas such as manually watered carries and quick coupling valves on intermediate roughs, along with town water-fed clubhouse lawns have been left unirrigated.

Normally we would apply wetting agents to greens three times per season, but this year we will be adopting a more stringent programme with greens done every 4-5 weeks and tees 3-4 times over the season. The club is also using anti-evaporation silicone based chemicals in course dams to help reduce water losses through evaporation.

The club has been in negotiations with the Corowa Shire Council which is building a new sewerage treatment facility in Mulwala. The site of the new plant is about one kilometre



#### ■ Bayer Environmental Science

# YOUR ESSENTIAL SUMMER SURVIVAL KIT

Summer decline. It's an inescapable threat to fine turf. So make Chipco Signature your essential partner for hot-weather turf management. Only Chipco Signature provides immediate protection against turf disease to strengthen turf's natural defences. The result is stronger turf that builds up carbohydrates which lowers respiration during periods of stress. With Chipco Signature in your fungicide tank-mix, your fine turf won't just survive – it will thrive.

Bayer Environmental Science 391 - 393 Tooronga Road East Hawthorn, Vic. 3123. Ph. (03) 9248 6888 www. bayercropscience.com.au bayer 200 226 022



Chipco® and Signature<sup>TM</sup> are Trademarks of Bayer. Bayer Environmental Science is a business group of Bayer Cropscience Pty Ltd. BET0005 The Hopkins Part.



from the course and access to Class A water \$300,000 per year combined. The club also could be online for the 08/09 season. About had a greens replacement programme that

could be online for the 08/09 season. About 200M of treated effluent would be produced each year and the club has two storage dams which hold a capacity of 55M to store this water.

Swanwick's role at Yarrawonga and Border

Another alternative that the club is investigating is the underground water aquifer running through the course which is currently being monitored by HLA Enviro Science on behalf of the ADI manufacturing plant. There have been three test bores sunk on the club's land and regular water quality monitoring is being carried out. The club has been contacted on numerous occasions regarding the use of this groundwater and in the future a trial site may be set up on the couch nursery.

The club has also had on its agenda for the past few years to purchase more permanent high security water to boost the current 114M that exists on our license. A purchase of 200M of Victorian high security water at a cost of \$400,000 is currently being transferred onto the club's license. This is the first application for Victorian water to be transferred onto a NSW license under new interstate legislation that was passed last year.

The purchase of water for this year and last year combined has at this stage halted our 07/08 machinery replacement programme and also slowed down our capital works programme which would be approximately \$300,000 per year combined. The club also had a greens replacement programme that was to be implemented on the Murray Course this year, but understandably this has had to be put on hold until water allocations are back to somewhere near normal.

The course maintenance budget is still as per normal and a close eye is being kept on all expenditure areas. An increase on purchasing of wetting agents this season will occur but some of this cost can be offset as there has been a significant reduction in preemergent herbicides purchased for summer grass control due to drought conditions.

As for the wider picture, I have a few suggestions which may help towards improving the current situation:

- Limit or restrict the amount of new allocation approvals until more storage facilities are built;
- Permanent Level 1 or 2 water restrictions all year around and incentives for householders to water their gardens with rainwater or grey water via tanks;
- All large turf facilities such as golf courses, councils and other sporting facilities should implement strategic water management plans;
- Large turf complexes, wherever possible, to source two or three different irrigation water sources. A combination of any would help drought proof their facilities;

- Using drought-tolerant grasses;
- Prioritising water zones on turf facilities so that areas that are less important are left unirrigated in the event of drought conditions;
- Careful administering of water allocations each irrigation season by relevant state government authorities to all irrigators; and
- Proposed studies should be conducted into the increasing population along the Murray system, the increase in irrigation and town water use along the system. Over the past 25 years that I have been involved in our area as an irrigator I have seen a huge demand on this precious resource that has a very limited catchments area compared to the ever increasing demand placed upon it.

I am sure that most superintendents have moments of insanity when it seems that everything is stacked against them. Overwhelming events such as floods, droughts, heat waves and problem staff are all sent to try even the most knowledgeable, weatherbeaten, hardnosed super. Throw in a couple of teenage children into the mix and it is a wonder that there isn't a special asylum just for golf course superintendents.

I have found that in my area along the river all the course supers from Swan Hill through to Albury and as far south as Shepparton have a great network that if any problem arises we can call each other and have a good old fashioned chat about what is going on and life in general.

It's the camaraderie and knowing you are not the only poor bugger going through these events that helps you get through any problem. Most of the supers along the river have either been there and done that and have usually found some way to overcome or cope with whatever is thrown their way, be it by Mother Nature or situations that arise in their working life.

Like most things, necessity is the mother of invention and it's usually the case of find a way to solve a problem or call someone that may know how to help you. Most supers I know are an inventive lot and will try almost anything within reason to solve the problem and keep their sanity in tact.

#### MURRAY BRIDGE GOLF CLUB

#### Superintendent: Mal Grundy

The Murray Bridge Golf Club is totally reliant on pumping irrigation water directly from the Murray River. Due to the well documented drought and extreme low flows to the Murray-Darling system, our normal allocation of 216M, of which we use an average 60-65 per cent (130-140M) has been reduced to 16 per cent (34.5meg).

To make things worse Murray Bridge has experienced extreme dry and windy weather when, in an average season, we get a bit of help. This made us start our irrigation programme season in mid August and it hasn't let up since. As well as low rainfall levels, river data also predicts salinity to rise above 1200ppm, which will also certainly have an impact on turf management, not to mention added cost of foot valve work.

The club has now looked at the priorities of turf with the obvious of green/surrounds, tees, approaches and fairways (in order of priority). We need 35M for greens alone, a further 10M for tees and without purchasing more water there's none for the fairways. The club as 'leased' a further 25M at a cost of \$26,000 and is crunching the numbers to see which rich members to suck up to for another 20M.

We have a small flood mitigation area on the course being fed from council stormwater. We currently pump out of these dams into our 600-litre spray unit to pick up hot spots on greens only, but this is only a band aid solution. The local council has funded the testing of a bore which is used to dispose the storm water. Primary testing shows that reasonable water quality at a rate of 2l/s but this has not been tried for longer than 5-6 hour periods.

Effluent is not an option, as I suppose the mentality of the river being a renewable, endless, reliable resource has prompted the powers that be to pump all effluent as far as humanly possible from the town which therefore restricts the cost effectiveness of pumping it all the way back to use on reserves, parks, etc.

The club relies on casual green fees to approximately 120,000-130,000 per year and as the course fairways dry off it's fair to say so will the green fee dollars. We are situated one hour from Adelaide on the south eastern freeway so our visiting clients pass four well maintained, bore-irrigated hills courses.

I also mentioned our foot valve. It currently has approximately 200-300mm cover of water, with the boffins saying that river levels could drop a further 800mm by March. We are looking at spending in excess of \$10,000 to put in a new foot valve system to reach the water we have bought.

Among all the doom and gloom, Geelong won the AFL premiership and our shed's strategic playing of a wildcard to win the AGCSA footy tipping comp (hello Berri boys!) gave us some light relief.

Looking at the bigger picture, though, I don't have to look far to see family farms being left by the score and I do feel that this situation has got the potential to change the social fabric of this state's Murray irrigation area forever! There are a lot of people doing it a lot tougher than us, but if significant rains don't fall soon things will be a lot worse.

#### **RICH RIVER GOLF CLUB**

#### Superintendent: Andrew Johnson

Rich River, a 36-hole club, draws all its water from Murray River for its total water supply. Irrigation has been limited on fairways to once a week while greens and tees are watered 2-3 times per week. Dry areas on fairways are topped up with extra water via stand sprinklers.

It has only been the last couple of years that watering the course has been extremely tough, due to no water allocations from a lack of rainfall in the water catchments of Hume and Dartmouth. The club has a general security water allocation of 1391M and 56M of high security.

In a normal year, which we have not seen for a long while, our water usage from the Murray is between 600-700M. This is probably a lot of water to most clubs but the club also





supplies water to a 100-acre vineyard and maintains water levels in five hectares of lakes and dam systems on course.

The water situation is far worse now than 12 months ago. The club has less water available but there has been more rain late in the season, which has taken pressure of watering for the time being. If the current water situation dose not improve over the next 6-8 months I do not envisage much water available for the 2007-2008 watering season. Our watering regime has been adjusted months ago. Wetting agents on tees and greens have been applied fortnightly and water has been purchased as it is required.

Considering that water from the river might not be available next year, the club has investigated two alternative water supplies – effluent and bore water. Unfortunately we cannot get access to effluent water but are have made an application for a test bore licence for access to ground water in early 2008.

The 2006-2007 watering season the water authority suspended 52 per cent of water allocations three months into the season. This hurt a lot of primary producers and also our club. Prior to this announcement I had put in place measures of reducing our evaporation and seepage losses in our dams and lake systems.

Closing off the lakes that were not required for irrigation and using the water for watering gave the club a good backup water supply. Unfortunately it did leave all the lakes very barren and desolate but the course was alive and in fairly good condition (we lose up to 80M a year in seepage and evaporation losses).

In 2006, the club was successful in a community water grant of \$47,000 for harvesting stormwater off an adjacent industrial estate. This pump station and pipeline was installed in the spring of 2006. It is estimated when the industrial estate is fully operational we expect to receive 50M annually.

At this stage our water management issues have taken a high priority and other major capital works have been put on hold. Generally the golfing public do expect to have a green course when they play golf. There has been a down turn from green fees over the past two years. Whether this is from the drought or increased competition from other courses I don't know.

Looking into the future, I strongly believe that local and federal governments have to invest huge amounts of money on improving infrastructure on how and the way we store water.

#### BERRI GOLF CLUB

#### Superintendent: Kym Traeger

The Berri Golf Club is in a reasonable position at the moment, thanks to the EPA, Health Department, United Utilities and the Berri-Barmera Council. Fortunately through those parties we have been able to access recycled water for our tees and fairways, at a reduced application at our 'farm gate' of 0.5M.

Previously reliant on mainly River Murray waste and some factory waste water, we are in the situation where we can water fairways twice weekly with recycled and greens with river water. Through community grants, we are in the process of installing a new irrigation system including pumps to service the greens and approaches with Murray water while it lasts.

With summer on our doorstep our annual allocation of 161M, reduced to 22 per cent, along with some carry over, stands at about 39M which leaves us short 12-15M based on 2005-06 consumption. We started with a management plan but with so little water at this time what's the point!

The hoses and water birds are out and the Toro hand held is almost worn out. Capital expenditure has been all but suspended as we concentrate on a new system for the greens using river water.

The next 12 months will be interesting to see where things go, especially with Victoria refusing to sign up with other states on the federal government scheme for one. With more "water authorities" bobbing up, more levies to pay, and not a compromise or a worthwhile brain between the decision-makers, who knows where we will be in 2008 and beyond.



# Rest assured with new HERITAGE MAXX. The liquid fungicide designed exclusively for turf.

He won't lie awake at night worrying about his turf. Or his reputation. And nor will you, thanks to HERITAGE MAXX<sup>®</sup> from Syngenta. Designed exclusively for turf, the smaller particles of the new micro-emulsion formulation enable a 25% faster foliar intake and 100% faster root uptake – producing earlier protection against disease<sup>\*</sup>. Liquid HERITAGE MAXX not only provides longer lasting, broad spectrum control but also negligible odour,

stable tank mixes and ease of measurement. So, for peace of mind and a playing surface second to none, choose new liquid HERITAGE MAXX. Protect your turf and your reputation. For more information visit **www.greencast.com.au** or call the Syngenta Technical Product Advice line on 1800 067 108.



Protect your turf and your reputation



# Subcontinent sojourn

n December 2002, Colonel K.D. Bagga (retired) on a visit to Australia met with NSW superintendents Gary Dempsey (New South Wales Golf Club) and Martyn Black (Castle Hill Country Club). The discussions that occurred inspired Col. Bagga to establish an association for Indian golf course superintendents.

In 2005, following a meeting between then AGCSA chief executive Steven Potts, Martyn Black, Gary Dempsey and Col. Bagga, the AGCSA was able to provide some small inspiration and assistance to the newly formed Golf Course Superintendents and Managers Association of India (GCS&MAI).

In 2006, Martyn Black represented the AGCSA at the inaugural conference and provided further inspiration and a sense of what a fraternal association is all about – friendship, fun and shared experiences. In typical Blacky fashion he wrote himself into the annals of Indian history by winning the GCS&MAI's golf championship and then the World Amateur Inter-Team Challenge.

In October 2007, the AGCSA was again invited to be part of the second GCS&MAI golf show and seminar and along with president Jeff Gambin and Gary Dempsey we gave 10 presentations and shared our experiences with about 100 attendees in New Delhi. In 2006, then AGCSA Board member Martyn Black represented the AGCSA at the inaugural seminar hosted by the Golf Course Superintendents and Managers Association of India (GCS&MAI). That pioneering journey, during which he wrote himself into Indian folklore by winning the annual GCS&MAI golf championship, sparked an ongoing relationship between the two associations. In October 2007, the AGCSA was invited to attend the second seminar hosted in New Delhi, with AGCSA president Jeff Gambin joining AGCSA general manager John Neylan and NSW superintendent Gary Dempsey for a week-long subcontinent sojourn.

With a burgeoning economy and greater discretional spending, the sport of golf in India is increasing in popularity, as is the number of golf courses. What is apparent is that the demand for improving the condition of golf courses is out-pacing the current greenkeeping expertise and the number of experienced golf course superintendents. ease back in the maintenance stakes, in India there is a demand for increased maintenance and presentation. Our impressions from the conference are that there is a lot to learn, the potential is high and the enthusiasm is increasing.

My impression of the Indian golf scene during this relative short stay is one of a dichotomy of contradictions. On the one hand Gary Dempsey, John Neylan and Jeff Gambin represented the AGCSA at the GCS&MAI seminar in New Dehli last October. Here they are pictured with Col. Bagga (second from left) and staff from Royal Spring Golf Course in Kashmir, including female superintendent Nuzhat Gul

there are environmental concerns such as the desire to preserve the native flora, while on the other hand some work practices would challenge any WorkCover official.

#### GCS&MAI SEMINAR

The GCS&MAI seminar and golf industry show began amid much fanfare with the opening ceremony featuring an Indian military pipe band, just one of the many British influences that remain throughout the country.

The seminar started early Saturday morning under the chairmanship of Colonel Uberoi. He is well known for his dry wit and somewhat close to the edge jokes and was easily encouraged to share one with the audience. It was a calming surprise in what appeared to be a very formal atmosphere.

Col. Bagga opened proceedings with a passionate speech about where the Indian association had come from and how it was starting to achieve some of the aims that had initially been set. Col. Bagga is a golf course architect and a visionary with a passion for taking golf in India to a new level. A large part of achieving this vision is acknowledging that education is a critical factor in the training and advancement of the skills of turf managers employed on Indian golf courses. His catchphrase was that you required "super intent" in being a superintendent.



Col. Bagga has been the key person driving the GCS&MAI and was faced with the onerous task of organising this seminar at a time when he was grieving for his wife who died earlier in the year. It gave us much pleasure to share a meal with him after day one of the seminar and to hear him express that the success of the day had lifted a great weight off his shoulders.

The seminar was great fun and the local speakers appeared to attract the most scrutiny. As Martyn Black experienced last year, discussions quickly turned into raging blues. With the AGCSA contingent we were very politely treated and usually swamped at the breaks with a multitude of questions.

One of the more intriguing presentations was by Mr. G.S. Mani and his talk on 'Virtuous Indian Fertilisation Programs, Bio-dynamic Ways'. It was an interesting talk on the use of a combination of cow horn and other manures that are buried in the ground to compost and then extracted and water filtered through to produce an organic liquid fertiliser.

Mr. Mani was passionate about his indigenous flora and the removal of the dreaded water-stealing eucalypts and was undertaking the planting of indigenous trees on his golf course. One of the more intriguing aspects of his talk was the effect that dehorning cattle has on their well-being and the resulting cosmic imbalances that occur!

A local agronomist, Dr. Naresh Pancholi, also spoke on the use of organic fertilisers and the importance of keeping the cost of maintenance low. This created another animated discussion about the convenience and availability of applying various plant extracts such as neem and castor cake. Dr. Pancholi has applied for an Australian Government-sponsored study bursary and we hope to see him in Australia in 2008.



As for the AGCSA contingent, we gave 10 presentations. Jeff Gambin spoke about the AGCSA, managing warm-season grasses and weed control, while Gary Dempsey spoke on ERI disease, strategic planning and the environment. I spoke on cost vs quality, new warm-season grasses, and diseases, and co-presented with Jeff on weed control. Jeff and Gary represented the AGCSA and the superintendent profession extremely well and were very well received.

During our stay we visited several golf courses, all different and providing a variety of layouts and back drops. With the majority of golf courses in India owned by the military, there is a strong military presence at many of the privately owned golf courses. Retired military officers work as club managers, secretaries and course managers. Every course we visited had a special problem area that the AGCSA contingent was asked to comment on.

#### DELHI GOLF CLUB

The Delhi Golf Club dates back to at least 1930 and possibly earlier with the club having a trophy dating back to 1911. The course is 27 holes and was remodelled by Peter Thomson in 1977-1978. Over time it has been finetuned by various greens committees and currently Australian golf course architect Phil Ryan (Pacific Coast Design) is providing a redesign of the 'Peacock 9'.

The golf course is routed through an ancient burial site where the tombs of forgotten Moguls provide a spectacular backdrop to the golf course. There are 22 significant monuments on the golf course dating back some 1200 years. The Delhi Golf Club is in the middle of a bustling and bursting metropolis and has provided a means of preserving these significant artefacts.

It was following WWII that the government of the day prevented the neglected course (due to the war) from being developed as housing and it now provides a green wedge in the middle of one of the most highly urbanised cities of the world (Delhi has a population of about 10 million).

Staff averages about 100, with superintendent Pradeep Joshi having an agricultural degree. Traditionally the course has relied on lots of cheap labour and not a lot of

A team of up to 12 women are responsible for divotting at Dehli Golf Club



Dusting greens, Indian style, at Dehli Golf Club

equipment, however this is changing with the need to lift the course to a new level and to manage around 100,000 rounds a year. To cope with the divots there are 10-12 ladies out divotting each day.

The green s are Tifdwarf, which were very well presented and maintained at about 4-5mm cutting height. The fairways consist of a beautiful native *Cynodon* sp. called Doob (also Doub) grass and appears superior to the Tifway seen at other courses. The main weed problem is *Cyperus* sp. (sedges) and without a registered herbicide available, hand-weeding is a primary form of control.

As the golf course is carved through what was once jungle, an injudicious slice or hook takes you into dense vegetation and cobra country. Trees surround several greens which impact on turf maintenance, however the trees are protected under various environmental laws and any thinning or clearing is a drawn out bureaucratic process.

The Delhi region has an extreme climate with a winter minimum temperature of 2-4°C (with a 20°C max) where the *Cynodon* sp. goes into dormancy for about eight weeks. In summer, temperatures can reach a regular blistering maximum in the mid-40s and combined with a two-month wet season provides a very hot, wet and humid climate.



The Delhi Golf Club was an absolute highlight and very well presented and again hosted the 2007 Indian Open and will host a European PGA event in early 2008.

Following our first day dodging all manner of traffic – three-wheel taxis, cows, cars, trucks, bicycles and pedestrians, which were all going somewhere in a hurry, even up the wrong side of the road – we spent an evening with the Delhi Golf Club greens committee. Hosted by club captain Ranji Chaudhri and secretary Rajiv Hora, we discussed a number of turf issues and it just goes to show that committees have the same concerns no matter where you go in the world.

#### JAYPEE GREENS

This Greg Norman-designed course is proclaimed to be the longest in India at 7343 yards. It is an open course, with few trees and a penalising series of nine large waterways and five smaller ponds that are always in play. Jaypee Greens also boasts a five-hectare driving range and teaching facility.

It is typical of many modern courses and is an integral part of a housing subdivision on a land area of 75 hectares. The 88 white sand bunkers are a prominent feature of this layout and provide the 65 staff with plenty to do. The general manager (maintenance) is Colonel K.K.K. Singh (retd.) and the book on golf course management by Dr. James Beard is their 'bible'.

On the day of our visit the course was hosting a tournament and there is no doubt that professional golfers have attitude no matter where you go.

The greens are Tifdwarf and there has been considerable mutation resulting in the typical patchy appearance that is often seen on old hybrid *Cynodon* sp. greens. The plan is to convert to TifEagle in the future. The greens are maintained at 4-5mm for general play and at 3mm for the tournament. The fairways are Tifway (or Evergreen) and both fairways, greens, tees and roughs were very well presented.

The soils on the site are calcareous and combined with alkaline water presents challenges in maintaining turf health due to increasing soil pH and salinity.

## GOLDEN GREENS GOLF & COUNTRY CLUB

Off early again and into the crush of traffic and out into the rural back blocks to a real hidden gem. Down a long country track that challenged our driver's skills, we arrived at a 'desert' links course that had a similar aspect to the Alice Springs Golf Club. With dry mountains as the backdrop, this Martin Hawtree-designed course is something special.

In the middle of farm land, this course is truly minimalist and follows the principles of links maintenance and is lean, mean, hard, fast and bouncy. The golf course is constructed on a sandy loam soil and experiences a range of weather conditions – light winter frosts, summer temperatures up to 45°C and dense fogs in January/February with the monsoon during July/August. The combination of an open landscape, firm and fast surfaces and winds that are funnelled through the course by the surrounding hills provide a major golfing challenge.

The greens are Tifdwarf and without an automatic irrigation system they are watered by hand by a crew of 20 ladies that is also responsible for divotting. The fairways are common couchgrass and are watered via quick couplers. The course is maintained by 35 staff under the management of Wing Commander K.K. Singh (retd.) who is a devotee of links courses and their management.

Lunch at Golden Greens was an introduction to traditional Indian fare with a selection of dishes. The small, innocuous green chillies disguised as beans, sitting beside the sedate tomato, cucumber and carrot, was president Jeff's first experience of hot and feisty. Trying to pretend everything was ok, the flush in the face and the sweating brow soon alerted the rest of us that he was in strife. Welcome to Indian cuisine!

#### NOIDA GOLF CLUB

The Noida Golf Club hosted the GCS&MAI Golf Championship and it was a pity that Blacky couldn't defend his title. The course is managed by Blacky's humorous mate Col. Uberoi who gave us the tour with two of his ground staff. There was much to discuss and the greenkeepers were most interested in the opinions of Jeff and Gary.

#### WE'RE ON YOUR TURF. MAKING LIFE EASIER

THE FORMULA FOR TOP-NOTCH TURF BEGINS WITH THE MH-400 MATERIAL HANDLER AND THE PP-180 TOP DRESSER. TOP DRESS ALL YOUR GREENS IN UNDER TWO HOURS USING THIS UNBEATABLE COMBINATION.

WWW.TYCROPTURF.COM



For more information speak with your local Toro representative. For Customer Service call 1800 356 372



Gary Dempsey and Jeff Gambin get a once in a lifetime opportunity to tend to the turf at India's iconic Taj Mahal

The golf course has been remodelled by Col. Bagga and the local Doob grass has been used to great effect on the greens, tees and fairways. This natural selection of *Cynodon* (considered to be an agricultural weed in India) is fine-leafed and under close cutting produces a dense turf and a good putting surface. The grass selections follow the philosophy of Col. Bagga in utilising native grass species that require minimal maintenance.

The golf course relies on groundwater that is alkaline and high in salinity and it poses problems around the course. A vertidrain and wetting agents would undoubtedly assist the maintenance of this golf course.

The golf course has developed a stormwater and aquifer recharge system to catch water during the monsoon in a flood basin which soaks into the soil and recharges the aquifer. With the recent development of the aquifer recharge schemes in South Australia it is interesting that India has already started a similar programme of water conservation.

#### TAJ MAHAL

One of the many highlights of the trip to India was visiting one of the Seven Wonders of the World – the Taj Mahal. The trip to Agra is an event in itself with all manner of transport sharing the road. As we ran into a procession of 50,000 people walking to Delhi in protest against some of the government's policies on developing rural areas, all hell broke loose as four clogged lanes shared two lanes for several kilometres. At our breakfast stop, president Jeff learnt that if a man offers to wash your hands in the toilet you are expected to pay! The ensuing discussions and explanations were most amusing.

The scale, geometry and workmanship of the Taj Mahal are breathtaking and challenge the mind in how such a wonder could have been constructed some 400 years ago. Another great feature is the beautiful gardens that frame the Taj which add to its precise geometry. The gardens provide a unique tranquillity where peace and quiet is a rare commodity.

The lawns are a feature of this beautiful landscape and consist of the local Doob grass and there was not a weed in sight. The lawns leading up to the Taj have a unique pattern of paving that appeared to be used to direct water over the lawn area via flood irrigation.

Another feature of the lawns was watching them being mown with a push cylinder mower. As curious turfies, we approached the workers for a few photos and Jeff and Gary were quickly invited to put their skills to the test. They must have looked like greenkeepers or maybe just another chance to score a few rupees.

#### HOSPITALITY

The hospitality provided during our stay is incalculable and there are many people to thank. Thanks must go to Col. Bagga. He is a wonderful gentleman and a great enthusiast for golf in India and assisting in the development and training of golf course superintendents. Blacky's host Brigadier Bains (retd.) provided us with a memorable evening at his home and regaled us with stories of how Blacky drank all his beer (and some more).

Our host for most of the trip was Rakesh Sharma from construction company Alert Golf. Rakesh looked after us wherever we went and taking us into the depths of Old Delhi was an absolute highlight, albeit a little confronting. A skilled negotiator, Rakesh managed to beat down the price on everything we purchased and provided us with a unique insight into India. We will forever value his friendship and hope that one day we can return some of his generosity.

Among the many interesting people we met were the staff from the Royal Spring Golf Course in Kashmir. At several thousand feet above sea level it is a Trent Jones Jr course using cool-season grasses. The course manger is Nuzhat Gul who is one of the few female turf managers in India and is indicative of the enthusiastic future for golf course superintendents and the profession.



#### Contact: John Purtell Mobile: 0418 264 290 www.turfcraftmachinery.com.au



#### TINES/SLITTERS/SCARIFIERS

For Turf Maintenance Machinery -Engineered by Turfcraft Machinery Australia.

- Quality Australian Made Steel
- Engineered with treatment to suit Australian Conditions
- Solid Tines
- Coring Tines
- Turf Slitters

All tines are manufactured from high quality Australian Steel and heat treated to exact specification to ensure Long Life and Durability.

# What Do You Look for in an Aerator?

SMOOTH OPERATION • TROUBLE FREE MACHINE • EASY TO OPERATE Look Under Our Cover...You won't Have to Look any further!





O-Ring Chains
Cranking Arms Align Perfect for Durability
Farts and Service Available Immediately
Perfect Coring Holes

Permanently Timed

So Smooth No Rear Roller Needed!



**Tel: 02 9771 9030** Fax: 02 9771 9060 Email: John@turfcraftmachinery.com.au Email: john.purtell@bigpond.com

The **SO** 

Breathin' a Whole Lot Easier!

URFCRAFT Machinery Australia PO Box 3249 Bangor NSW 2234 Contact: John Purtell Mob: 0418 264 290

# TORO TOPO TUPF TOUP

estled in the Adelaide suburb of Seaton resides one of Australia's celebrated sand belt courses. Royal Adelaide Golf Club needs little introduction and it is widely acknowledged in golfing circles as being among the best in Australia and the world.

Indeed, when US Golf Magazine released its list of the world's top 100 golf courses late in 2007, the Alister MacKenzie masterpiece easily retained its status among the world's elite layouts. Coming in at 75, it was one of six Australian courses to make the exalted list, again reaffirming not only the excellent courses this country boasts but also the fine work being undertaken by those superintendents employed to keep them in world class condition.

Royal Adelaide is home to superintendent Jeff Kaines who is about to enter his ninth year at the helm. Together with long-serving assistant Mark Everingham and a greenkeeping crew of 14, Kaines always has Royal Adelaide looking in top condition and helping achieve that, not surprisingly, is a full complement of Toro equipment. **Royal Adelaide's 'red shed' houses:** 

- Seven Greensmaster 1000 walkbehinds
- Three 3250-D triplex mowers
- One Reelmaster 3100-D Sidewinder surrounds
- Nine Workman 2110 utility vehicles
- Two 5500-D fairway units
- 328-D and 3000-D rough cutters
- One Multi Pro 1250 spray unit
- Two Sand Pro bunker rakes
- Toro Site Pro 2.2, central decoder system

While Kaines is an admirer of all his Toro equipment, the one product that really stands out in his mind is the SitePro irrigation central control system. Royal Adelaide was one of the first courses in Australia to





Royal Adelaide has nine Workman 2110s

install the original version of SitePro back in the late 1990s with Toro using it as a test site.

"The SitePro system is probably the best tool we have on the course," says Kaines. "It's very flexible and makes watering the course a breeze."

Since its introduction, SitePro has grown to be the most widely used central control system in the golf course industry, giving superintendents the features they need and the options they want. One of its key features is that it can be customised to suit the specific needs of any golf course.

Royal Adelaide has recently taken delivery of the latest SitePro version (v2.2) which in addition to the many excellent standard features boasts a number of new features and enhancements:

- Supports new Network VP Satellites and GDC (Golf Decoder Control) systems
- New graphics to freshen the look and feel
- Sequential station group multi manuals
- Hardware changes to improve speed and performance



Royal Adelaide's greens are always in peak condition thanks to the Greensmaster 1000

- New architecture to improve navigation and enable users to select screens simultaneously
- Faster, new reporting structures allowing users to extract into spreadsheets
- New alarm responses and projected flow views
- Pump integration As far as fine turf management

is concerned, Toro's precision line-up of mowing equipment helps maintain Royal Adelaide's predominantly bent greens and native couch fairways in pristine condition all year round.

Toro's Greensmaster 1000 has earned a legendary reputation for superior greens mowing worldwide and is the mower of choice for many prestigious courses. Royal Adelaide

#### Location: Royal Adelaide Golf Club Superintendent: Jeff Kaines



can certainly vouch for that and Kaines has seven of the units at his disposal.

"We will always use the walkbehinds to mow the greens here at Royal Adelaide and you really can't beat the Greensmaster 1000 for their performance," says Kaines. "The 1000s certainly produce that superb finish on the bent greens.

"Also with the fine turf cutting equipment like the Greensmaster 1000s, as well as the 3250-D triplex, our turf technician finds them very easy to work on, and the reliability is, of course, second to none."

The whisper-quiet performance of the 3.7 hp (2.8 kW) OHV Kawasaki engine on the Greensmaster 1000 has also won many fans in both operators and neighbours. The low noise level is safe on ears and won't wake the neighborhood when mowing in the morning. And to keep technicians happy, the engine design provides easy access to service points while a sealed gearbox and drive belts require no lubricants that could damage greens.

Kaines can also call on three 3250-D triplex mowers, two of which are set up for greens and the other for tees. The versatile 3250-D is powered by a large, 3-cylinder, 21hp Briggs and Stratton, Vanguard/ Daihatsu liquid-cooled diesel engine which provides the performance needed.

The revolutionary cutting system on the 3250-D offers a single high performance cutting unit, with a choice of 8- or 11-blade reels. The new cutting system is standard on all Toro riding greensmowers and as replacement units for any existing Toro riding greensmowers.

Features include the ability to cut as low as 1.6mm for new cultivars and the quality of cut is enhanced with the aluminum cutting unit frame which holds adjustment and maintains constant cutting edge position. Sealed reel and roller bearings eliminate daily maintenance and the popular dual



Royal Adelaide has three 3250-D mowers, two used on greens and one for tees

point adjustment system from the Greensmaster 1000 makes any adjustment simple and accurate.

Kaines is also a big fan of the Toro Workman 2110 utilities – as is the rest of his crew for that matter – so much so that Royal Adelaide has a fleet of nine. Kaines says the 2110 is a lot quieter than its main competitor and from a comfort point of view is superior to any other utility on the market.

The Workman 2110 utility features hydraulic front disc and rear drum brakes that provide optimum braking performance under hilly or heavy load conditions. The powerful 16hp engine and the hydraulic braking system also allow for extraordinary towing capacity of up to 550kg when using a heavy-duty tow hitch.

"More than anything though, what I particularly like is Toro's customer service and their backup," adds Kaines. "If we've got something on like a major tournament and we need extra

TOPO TUPF TOUP TORO

#### Location: Royal Adelaide Golf Club Superintendent: Jeff Kaines

machinery, or if something has broken down and is out of action, I know I can always source additional or replacement machinery quickly. Whether it's lending a new one out of the showroom or picking up one from somewhere else, there is no issue.

"And the trade value with Toro equipment is always very good. We actually get quite a lot of smaller clubs contacting us wanting to know when we are purchasing new machinery. They want to get hold of our old Toro equipment because they know we look after them very well and they do such a good job."

#### All eyes on Adelaide

Royal Adelaide is no stranger to tournaments and over the years has hosted nine Australian Opens and 16 Australian Amateur Championships. 2008 is set to be another big year for the club and in October it will play host to one of the game's biggest and most anticipated tournaments.

From 4-19 October, Royal Adelaide, in conjunction with the nearby The Grange Golf Club, will be hosting the World Amateur Teams Championships for the Eisenhower Cup and Espirito Santo trophy, which will see the world's leading amateur male and female golfers converge on Adelaide.

The World Amateur Team Championships was founded in 1958 and is a bi-annual event run by the International Golf Federation in conjunction with the host nation's governing body of golf. The global event is the pinnacle of the amateur game for the world's leading amateur golfers and 2008 marks the second occasion that Australia has hosted the





championships and the 50th year since the inaugural Eisenhower Trophy was played at St Andrews.

With the eyes of the golfing world set to focus on Royal Adelaide, Kaines is acutely aware of the need to get the course in peak condition. Fortunately he will be able to call on the expertise of his elite crew and the reliability and performance of his Toro fleet which is tailor-made for bringing the best out of golf courses come tournament time.

"We're really looking forward to the tournament and showcasing the course to the world," says Kaines.

"Being the biggest amateur golf event in the world, the expectation from the International Golf



Federation is that the greens will be very, very good and all over course presentation will be hugely important.

"In that regard it's great to know that we can rely on our equipment to deliver the results and having Toro on board will certainly make our job that little bit easier."





Consistently ranked in the top 5 courses in Australia, Royal Adelaide had been a host to many of Australia's greatest tournaments and golf's most heroic moments.

With Alister McKenzie's unmistakable influence in its design, this classic Australian course maintains its high standards with the help of Toro Total Solutions, an integrated approach to course management and maintenance with Toro commercial turf equipment and Toro irrigation systems.

They also know they can count on Toro for backup support, advice and service. It's nice to know we are helping in more ways than one.

For more information speak with your local Toro representative. For commercial customer service call 1800 356 372

For irrigation customer service call 1800 130 898

www.toro.com



Count on it.

**BY JOHN NEYLAN** 

The new AGCSA Environmental Initiative logo

John Neylan looks at the AGCSA's environmental management initiative and outlines the latest results to come from the warm-season grass trials at Redlands and Poa annua control trials being conducted in Victoria and NSW.

#### AGCSA ENVIRONMENTAL INITIATIVE LOGO

Golf courses often occupy significant tracts of urban land that may be in ecologically sensitive areas and provide a number of benefits to the community and the environment.

Golf course management is an intensive form of horticulture and requires moderate levels of inputs in order to sustain the quality of golfing surfaces. High quality turf requires a constant, good quality water supply, moderate nutrient levels, applications of pesticides; and energy inputs in operating machinery, pump stations and facilities.

All this often occurs in environmentally sensitive locations where the golf course operation not only has to manage the turf but also native flora and fauna, waterways, wetlands and soils.

Golf course management has become a high-tech industry, with an increasing range of new technologies available to assist golf courses in becoming more eco-efficient. The rapid adoption of new technologies and new practices has led to a greater understanding of potential environmental impacts.

Environmental responsibility is a core value of the Australian golf industry which recognises the important role it plays in maintaining golf courses in a sustainable and environmentally responsible manner.

To help facilitate this, over the past year



the AGCSA has rolled out its Environmental Initiative which has an ongoing commitment to improving environmental management. Through the Environmental Initiative the golf industry is committing to environmental excellence by:

- Integrating environmental factors into business decisions;
- Striving to meet and, where appropriate, exceed the requirements of all relevant legislation, regulations and other requirements to which the industry subscribes;
- Developing and maintaining the AGCSA's Golf Environmental Management Strategy that distinguishes the Australian golfing industry as the world leader in environmental management;

- Encouraging commitment to the environment through training and awareness programmes;
- Constantly striving to achieve continual improvement and the prevention of pollution in the environmental performance of golf courses;
- Promoting water management strategies to all members;
- Continuing to support and further enhance integrated pest management strategies;
- Setting environmental objectives and targets and assessing the golf industry's achievements;
- Annually reviewing the Environmental Initiative and to communicate it to all members of the Australian golf industry and the public.

#### TABLE 1: POA ANNUA COUNTS AT COMMONWEALTH GOLF CLUB

Treatme	nt	% Poa annua plants				
	20/12/06	20/03/07	11/05/07	2/07/07	24/08/07	24/10/07
T1	8.8	5.5	8.0	13.8	9.3	9.3
T2	8.8	5.0	5.5	13.0	9.8	5.8
Т3	8.8	3.0	7.3	6.8	7.3	2.0
T4	6.3	3.5	8.5	9.3	8.5	3.3
T5	7.5	3.5	6.0	5.5	5.0	1.3
T6	6.3	2.3	8.5	6.5	6.5	2.3
<b>T</b> 7	8.8	3.5	9.3	10.5	11.8	12.5
Control	10.0	5.0	16.3	15.5	15.5	19.3
P<0.05	ns	ns	3.2	5.1	6.6	5.5





The effects of endothal (left) and paclobutrazol (right) herbicide applications on the seven *Poa annua* types as part of the AGCSA's control trials

 Encouraging a similar environmental commitment from material suppliers and contractors;

Being part of such an initiative is a positive step for any golf club and one that should be widely promoted by superintendents and the club to members, the industry and the wider golfing community. To that end the AGCSA has designed a unique logo (pictured opposite) which those who have signed up to the initiative can now display to demonstrate their commitment to environmental excellence.

Many superintendents will well remember the first cover of Australian Turfgrass Management magazine some 10 years ago which featured a striking photo of a green and golden bell frog perched contently on a golf ball. That image has become synonymous with golf and environmental management and the AGCSA has incorporated it into the new environmental initiative logo.

Using this image is particularly appropriate as the frog is a creature highly sensitive to environmental conditions and changes in the environment. The presence of frogs in the environment indicates a healthy environment, clean water and low pollution.

In the case of the green and golden bell frog, its numbers have gradually declined to the point where it is now listed as endangered under the New South Wales Threatened Species Act and classified as vulnerable nationally.

Long Reef Golf Club in Sydney is one of the few remaining areas where this species of frog still thrives and is a prime example of the role golf courses can play in both maintaining and enhancing the environment. It is therefore appropriate that the AGCSA Environmental Initiative has adopted this image as a symbol of golf's commitment to the environment.

The green tick logo represents your club's commitment to being environmentally aware and that you are documenting your environmental activities through the preparation of a dedicated environmental management system.

The logo is now available to all clubs and organisations signed up to the AGCSA's Environmental Initiative who are free to use it on letterheads, newsletters, golf course signage and, in the case of suppliers to the turf industry, in their promotional literature. For more information about the AGCSA's Environmental Initiative and the new logo, contact the AGCSA on (03) 9548 8600 or email info@agcsa.com.au

#### POA ANNUA CONTROL TRIALS

In recent editions of ATM we have looked at the *Poa annua* control trials currently being undertaken at both Commonwealth Golf Club (VIC) and Bonnie Doon Golf Club (NSW). The spring application of herbicides has been undertaken while herbicide tolerance screening trials of the seven *Poa annua* types have also been made. The results at this time are detailed in Table 1 and Figure 1.

The treatments are:

**Treatment 1:** Monthly applications of Shortstop (a.i. Paclobutrazol @ 200g/l).

Treatment 2: Shortstop (a.i. Paclobutrazol @ 200g/l) @ 2.0/ha + Dimension @ 2l/ha.

Treatment 3: Shortstop (a.i. Paclobutrazol @ 200g/l) @ 2.0l/ha + Bensulide @ 30l/ha.

Treatment 4: Shortstop (a.i. Paclobutrazol @ 200g/l) @ 2.0l/ha + Dimension @ 2l/ha + Ethephon @ 8l/ha.

Treatment 5: Shortstop (a.i. Paclobutrazol @ 200g/l) @ 2.0l/ha + Bensulide @ 30l/ha + Ethephon (480g/L) @ 8l/ha.

Treatment 6: Shortstop (a.i. Paclobutrazol @ 200g/l) @ 2.0L/ha + Bensulide @ 30l/ha + Ethephon @ 8l/ha + Poacheck @ 1.5l/ha. Treatment 7: Endothal @ 1.5l/ha.

Treatment 8: Untreated control.

The results at this time show that all treatments have significantly less *Poa annua* than the control, with combination treatments (i.e.: T3-T6) providing the best results. The endothal-only treatment is the least effective of the treatments. The use of paclobutrazol and



#### BY JOHN NEYLAN

#### The warm season trial plots at Redlands

ethephon is also providing a very high quality playing surface as well as good *Poa* control.

The *Poa annua* type herbicide screening trial has demonstrated a variation in herbicide sensitivity depending on the *Poa annua* biotype. The dense, prostrate types show a greater resistance to herbicides compared to the more open and taller types as demonstrated in the photos (for a full description of the variation in *Poa annua* types, see AGCSATech Update Vol. 9.5). The herbicides tested are paclobutrazol, propyzamide and endothal.

### WARM-SEASON GRASS TRIALS AT REDLANDS

The warm-season grass project at the QDPI&F's Redlands Research Station has been under way for more than 18 months. The trials are already showing noticeable differences between the couchgrass hybrids and the seashore paspalums.

With reduced cutting heights, thatch accumulation and general maturity in the grasses, we are starting to get a good appreciation of the attributes of the different species and cultivars.

#### TABLE 2: MEAN HYBRID COUCHGRASS COLOUR, QUALITY AND THATCH VISUAL OBSERVATIONS 5 JUNE, 2007

Cultivar	Colour	Quality	Thatch
Mini Verde	7.63	7.63	3.88
MS-Supreme	6.38	7.00	2.25
Novotek	6.38	6.63	2.38
Tifdwarf	4.88	5.00	1.00
TifEagle	6.75	6.75	3.13
Tifgreen	6.13	6.75	1.63
LSD (P=0.05)	0.73	0.84	0.38
Champion	6.50	6.75	2.75
FloraDwarf	5.75	6.75	2.00

#### TABLE 3: MEAN SEASHORE PASPALUM COLOUR, QUALITY AND THATCH VISUAL OBSERVATIONS 5 JUNE, 2007

Cultivar	Colour	Quality	Thatch
Sea Isle 2000	7.50	7.13	1.05
Sea Isle			
Supreme	7.50	7.00	1.48
Velvetene	7.50	6.50	1.15
LSD (P=0.05)	0.58	0.25	0.14



There are several off-site trials being started (or about to be started) and these will provide useful information on species and cultivar performance under different climatic conditions and maintenance regimes. Sites are being established in Victoria, South Australia, New South Wales and Queensland.

Following the appointment of experienced superintendent Jon Penberthy in January 2007, each cultivar plot was scarified to remove thatch, topdressed with sand, and mowing height gradually reduced to bring them down to target treatment heights.

This height-reduction process was slowed when at 5mm the Sea Isle 2000, in particular, showed signs of scalping. These plots were dusted with sand to encourage re-growth in the scalped patches. The hybrid couchgrass plots were not affected adversely by the reduction in height.

Currently the cutting height of the hybrid couchgrass and seashore paspalum cultivars is at 2.7mm using a John Deere walk-behind greens mower. Jon has received a set of grooming heads from overseas (John Deere) and a Jacobsen walk-behind mower has also been delivered which will enable the research team to reach lower heights where required.

#### TABLE 4: INCIDENCE OF PATCH DISEASES (NUMBER OF DISEASED SPOTS PER 6x3M PLOT) IN HYBRID CYNODON CULTIVARS ON THE REDLANDS RESEARCH GREEN 31 AUGUST, 2007

Cultivar	Patch 1 (spring dead spot)	Patch 2 (ring spot)
MiniVerde	5.0	4.0
MS-Supreme	7.0	6.3
Novotek	3.5	12.3
Tifdwarf	1.0	4.8
TifEagle	7.5	12.8
Tifgreen	12.3	7.8
LSD (P=0.05)	7.6	5.7

The first set of ratings was conducted on 5 June, 2007 to assess turfgrass colour, quality and levels of thatch. Subjective visual ratings were made on a 0-9 scale (0 = poor, 9 = best) over the replicated plots and later analysed by research staff. The mean values of the two species can be seen in Tables 2 and 3.

#### PATCH DISEASES IN HYBRID COUCH PLOTS

Despite a preventative fungicide programme throughout 2006/07, two distinctly different patch diseases became evident in late winter 2007 in plots of the various hybrid *Cynodon* cultivars on the research green at Redlands. Samples of these two diseases were sent to Dr Percy Wong for identification.

The first of these showed classic symptoms of spring dead patch, with dead grass across the whole patch. The presence of *Leptosphaeria* sp., the causal organism of spring dead patch, was confirmed by Dr Wong in the two submitted samples from Tifgreen and MS-Supreme. He also found *Rhizoctonia solani* present in the sample from MS-Supreme.

The second patch disease showed up as a ring of dead grass around recovering green grass in the centre. Dr Wong isolated *Gaeumannomyces incrustans* from samples of TifEagle. Tests on these fungi are continuing to determine whether or not they are pathogenic to hybrid green couch.

Counts of the number of diseased spots in each plot were made on 31 August, 2007. All cultivars were affected to a greater or lesser degree by both diseases as the figures in Table 4 indicate.

Two observation plots of Champion Dwarf were also badly affected by both patch diseases (averages of 16 and 18 diseased spots per plot for patch diseases one and two, respectively). Interestingly, however, in two similar observation plots of FloraDwarf there were no spots present of either patch disease.

## Only Rain Bird<sup>®</sup> Smart Pump<sup>™</sup> Provides Real-Time Communication With Your Pump Station

#### Install Confidence: Install Rain Bird® Pump Stations.

Smart Pump

Active

Smart Pump<sup>™</sup> reduces water consumption and power costs while ensuring the best possible growing conditions on your golf course. Exclusively from Rain Bird,<sup>®</sup> 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.** 



RESERVOIR

**TO ROTORS** 

#### 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 © 2007 Rain Bird Corporation Leaf spot diseases

In this instalment of Tech Talk, Andrew Peart takes an in-depth look at two common leaf spot diseases – Drechslera and Bipolaris spp.

eaf spot diseases were once referred to as those caused by *Helminthosporium* spp. fungus. In recent times, however, this group of fungi have been divided into three genera - *Drechslera* spp., *Bipolaris* spp. and *Exserohilum* spp., although in some circumstances are still referred to as *Helminthosporium* leaf spot disease. *Drechslera* spp. and *Bipolaris* spp. are generally the more two common diseases of turfgrasses and will be the focus of this article.

These genera of diseases are known as facultative saprophytes as they are best equipped to be parasites, obtaining their food from living in or on another living organism, but have the ability to grow as a saprophyte (using dead organic matter as a food source).

Drechslera spp. are mainly diseases associated with the pooid group of grasses (cool-season grasses) with one exception *D.* gigantea that can be the causal agent of leaf spot in couchgass (*Cynodon* spp.). *Bipolaris* spp. on the other hand are primarily the causal agent for diseases of chloridoid and panicoid grasses (warm-season grasses). The exception is *B.sorokiniana* that is pathogenic to nearly all turfgrass species. Table 1. outlines the genera and species associated with causing disease to common turfgrass hosts.

#### DRECHSLERA SPP.

All Drechslera spp. diseases tend to form leaf lesions as the first symptom of the disease. The lesions caused by the different *Drechslera* species are different on each host plant. Leaf lesions on Kentucky bluegrass first appear as small, water soaked areas that soon become reddish brown to purplish black, that are often surrounded by a yellow zone fading into adjacent healthy green tissue.

Leaf lesions caused by *D.dictyoides* on fine fescue first appear as small, reddish brown, irregular shaped spots. These lesions then girdle the leaf causing initial yellowing and then dieback from the tip. On tall fescue and ryegrass the disease causes a fine network of short brown streaks parallel and perpendicular to the leaf axis rather than lesions (hence the name net-blotch) before the network pattern coalesce forming dark brown solid spots.

*D. siccans* produces small chocolate brown lesions on perennial ryegrass before they enlarge, leaving white to tan centres. *D. erythrospila* on bentgrass tends to form small brown to reddish brown circular to oval lesions. If lesions enlarge and coalesce it may give the diseased turf an overall reddish appearance.

On couchgrass, *D.gigantea* produces tiny brown spots. As they enlarge they become

elongated with the central area fading to tan. Theses elongated lesions have the ability to girdle the leaf and in some cases often produce concentric bands, giving rise to the common name known as zonate leaf spot.

Drechslera spp. survive unfavourable conditions as conidia (spores) and as dormant mycelium in infected plant tissue and debris. During periods of cool, moist weather the conidia may spread by various means including wind, rain, equipment or foot traffic. During optimal conditions these conidia can quickly germinate producing germ tubes that are able to infect leaf tissue.

Optimum conditions for conidia production is 15-18°C but they can be produced from 3-27°C. However, for infection to occur there must be moisture on the leaf surface. Therefore, ideally these diseases occur during cool, wet periods, with the exception of *D. erythrospila* (red leaf spot on bentgrass) and *D. gigantea* (zonate leaf spot) with these occurring during warm, wet periods on cool-season grasses and during autumn on warm-season grasses.

*Drechslera* spp. form mycelium, conidiophores and conidia. The mycelium tends to be dark brown which grows either inside the leaf tissue or along the surface. Conidiophores then emerge from within or arise from the leaf surface producing conidia. Cylindrical 3-10 septate (having walls) conidia are borne and range in size from 8-23 $\mu$ m in width by 25-130 $\mu$ m in length.

As mentioned, leaf wetness and mild temperatures are ideal for the development of the majority of diseases caused by *Drechslera* spp. In addition to these two factors, other conditions favouring the disease are;

- High humidity;
- Lack of air movement;
- Low light intensity (excessive cloud coverage or shading);
- Too low a mowing height for the specific host;
- Excessive nitrogen applications;
- Application of hormonal type fungicides or herbicides; and
- Excessive amounts of thatch and leaf clippings.

#### **BIPOLARIS SPP.**

*B. cynodontis* generally causes leaf, crown and root rot disease of *Cynodon* spp.(couchgrass). Leaf lesions are brownish green to black in colour and irregularly shaped. Severely infected leaves can die leaving them light tan to straw coloured. The other disease caused by *Bipolaris* spp. is, *B.sorokiniana* and is essentially identical to those diseases caused by *Drechslera* spp. on turfgrass hosts including *Cynodon, Festuca, Lolium, Agrotis* and *Poa annua*.

The disease cycle is similar to that of *Drechslera* with *B. cynodontis* infecting the foliage of warm-season grasses during the cool, moist periods from autumn through to spring. *B. sorokiniana*, however, affect coolseason grasses during wet weather in summer and more severely as the temperature rises from 20°C to 35°C.

The fungal identification can easily be mistaken for Drechslera spp. as there is very little difference between the two. The only difference is the conidia produced by *Bipolaris* spp. tends to be less cylindrical and more fusoid (width gradually tapering towards both ends), curved rather than straight and have a darker pigmentation.

Conditions for disease development of *Bipolaris* diseases are very similar to those of *Drechslera*, with the key aspect being prolonged periods of leaf wetness and favourable temperatures.

#### **CONTROL**

The cultural control methods for both species of disease pathogens discussed are very similar and include;

- Fertiliser applications should encourage moderate plant growth and avoid overstimulation especially in early spring and midsummer;
- Avoid frequent light irrigations, especially in the evening;
- Mow grass as high as practical;
- Reduce thatch depth, particularly if more than 2cm deep;
- Reduce impact of nearby plants that may cause shading or reduced air movement;
- If possible utilise cultivars of specific species such as Kentucky bluegrass or perennial ryegrass that are resistant to leaf spot diseases.

There are also a number of fungicides available that can be used either preventatively or curatively for use in controlling leaf spot diseases. The following are a list of those active ingredients registered for the control of *Helminthosporium*, although it must be noted that not all products that contain these active ingredients may be registered for use on turf.

- Azoxystrobin
- Bitertanol
- Iprodione
- Mancozeb
- Metiram/Thiram
- Procymidone
- Quintozene/Thiram
- Thiram
- Triadimenol

#### REFERENCES

Smiley, R., Dernoeden, P. & Clarke, B. (2002). Compendium of Turfgrass Diseases. APS Press 2nd Edition.

Turgeon A.(1999). Turfgrass Management. Prentice Hall 5th Edition.

Watschke, T., Dernoeden, P. & Shetlar, D.(1995). Managing Turfgrass Pests. W

#### TABLE 1. GENERA AND SPECIES ASSOCIATED WITH CAUSING DISEASE TO COMMON TURFGRASS HOSTS.

Host	Common Name of Disease	Pathogen
Kentucky bluegrass	Leaf spot, melting out	Drechslera poae
& other bluegrasses (Poa spp.)	Leaf spot, melting out	Biploaris sorokiniana
Tall fescue	Net-blotch	D. dictyoides
Creeping red fescue	Leaf spot, melting out	B. sorokiniana
	Net-blotch	D. dictyoides
Perennial ryegrass	Leaf spot, melting out	B. sorokiniana
	Net-blotch	D. dictyoides
	Brown blight	D. siccans
Bentgrasses	Red leaf spot	D. erythrospila
	Leaf spot	B. sorokiniana
Bermudagrass	Leaf spot, melting out	B. cynodontis
		D. gigantea

Table adapted from Watschke et. al, 1995 & Smiley et al, 2002



# THE PULSE

If there is one area of a golf course guaranteed to get superintendents talking, it's bunkers. With increasing standards in course presentation, expectations of highly manicured bunkers have become the norm to the point where one has to ask are they a hazard or an actual playing surface. The Pulse wanted to know how superintendents viewed bunker maintenance. whether it has reached unsustainable levels and whether they have been forced to bite the bullet and make significant changes to their bunker maintenance practices.

#### NATHAN BENNETT The Sands, Torquay, VIC



At The Sands, Torquay bunker maintenance is without question a major issue. The course has 118 bunkers with a total sand surface of about four hectares. A normal weekly maintenance

programme consists of touching up faces, although time doesn't allow us to broom the entire face as this would take all staff all day. We would spend around 60 hours a week on our normal bunker maintenance routine, and this doesn't account for edging and spraying.

The bunkers at The Sands, Torquay have been constructed with coarse sand that luckily enough doesn't blow out of the bunker. From a golfer's perspective the coarse sand isn't ideal as it doesn't lock together very well hence we get plugged balls on faces. The complaints about plugged balls is reducing as the faces are becoming firmer and members come to terms with it and realise that plugging balls aren't unique to The Sands.

Overall the club is reasonably happy with bunker maintenance and realises that spending more time in them would take away from other important jobs like providing a great surface to hit off and putt on rather then preparing a great hazard to hit out of.

Current maintenance practices haven't nullified the original concept of a bunker being a hazard, it has just made it a more uniform hazard. The golfer knows he will get a good lie and have enough sand under his ball. The problem is that the new golfer has only experienced the uniform bunker conditions and not the "hazard" of old so they don't know any better. If members and public golfers continue to push to have bunkers perfect 365 days a year then bunker maintenance will become unsustainable. I think that supersintendents have unintentionally made a rod for their own back by producing great bunkers, and now golfers expect that and more. Ju

#### **RUSSELL FLETCHER** The Lakes GC, NSW



Bunkers comprise a relatively small part of a golf course, but they can generate just as much controversy as the greens. The fact that bunkers are classified as a hazard doesn't reflect on the hours spent in maintenance.

Over a period of 14 years the club has embarked on overcoming bunker issues relating to golfers and maintenance. Initially the bunkers were traditional sand belt, with high sand faces which needed to be kept firm to prevent plugging. Due to different perceptions, this then led to changing to grass

faced, smaller English traditional bunkers. Both these style bunkers have their different maintenance issues with the latter style requiring the turf to be kept short so that the ball would roll into the hazard. This needs constant manicuring to give a high calibre presentation. In the height of summer six staff members will take six hours a week to maintain the edges and faces for a total of 132 bunkers. This is separate to the every day bunker presentation that takes two people every day 2.5 hours each to rake and maintain the bunkers. All up, 72 hours a week is spent in maintaining the bunkers. It would be fair to say that bunkers and greens are nearly on an equal basis for the hours spent in maintenance. This is no fault of the superintendent but rather from higher expectations from golfers as the same scenario applies for increase in green speed.

Do we need to go back to where the bunkers originated from? At present we are pursuing doing two holes using the concept of the unmanicured appearance. This has been a huge challenge and turn around from where the club was a decade ago but each course is unique and committee and architects need to ascertain which style best suits their landscape. As with everything, nothing stays the same and the golf course will be no different. M



Our first dvd is NOW available for purchase 'Environmental Issues for Golf Course Architecture' Order through our Bookshop (Offshoot)







Bunkers create undoubtedly the most comment, controversy and labour input than any other area of a golf course. Philip A. Truett in his essay 'To Rake or not to Rake Bunkers' said,

"The rot must have set in when some unknown club secretary sent a man out to rake the bunkers". He went on to say that "from that point onwards bunkers became pleasure grounds, not places of repentance". From humble beginnings bunkers are now intricately designed showpieces that have just as many design criteria as a putting green.

At Royal Sydney we are no different from most other golf clubs where bunker playability, access, design, position and golfer angst are never too far from the agenda of the day. It is without doubt the area on our golf courses that attracts the most criticism. Much time has been spent in the planning and design of bunkers but infinitely more is spent on their upkeep.

More time and money is spent on bunker maintenance than any other area. Each bunker is hand raked every morning with specially designed and made in-house wooden scrapes, which takes between 12-16 man hours. Leaves are also removed and sand pulled up over turf entries is pushed back into the bunker. Another 12-16 hours each day is then spent trimming, re-levelling floors, relocating windblown or water eroded sand, fly-mowing faces, weed removal, reshaping, installing geotextile cloth on faces, rotary tilling hardpans and firming soft sand with the addition of humic sand.

I would like to see bunkers returned to the object of their being i.e.: a hazard. As a true hazard one would generally find it a place to avoid and an area that extracts penalty. I agree with Peter Thomson who says that if he had his way "bunkers would be real hazards, a holy terror to get caught in and a frightening experience to get out of ."

#### PHIL MOYLAN Melville Glades GC, WA



Melville Glades Golf Club has 56 bunkers dug into the natural sand of the Perth Bassendean dune system. The members expect the bunkers to be raked at least three times per week

and the base to be free of sticks, leaves, roots and other debris. Also the edges must be kept in a sharp condition at all times. This takes approximately 300 man hours, four to five times per year to achieve this, along with nine hours per week of machine raking.

Being a realist, I know our members are not going to be convinced now to go back to the old line of thinking that bunkers are a hazard and maintenance should be minimal. We have, as an industry, created this problem for ourselves by trying to copy tournament levels of preparation on a daily basis.

We have recently appointed Ross Watson Golf Design to draft a master plan for a course upgrade. A major part of my input was to look at solving maintenance problems, so we started with bunkers. Bunker numbers won't be reduced, but the method of construction will have a large bearing on how they are maintained in future. We took a lineal measurement of our bunkers and found that all edges combined measured 2600 metres in length. That's over 10km in edging per year!

Our new strategy in upgrading the bunkers is to use Plateau couch in a one metre strip around the entire bunker edge. This should reduce edging to only two times per year. Also, the back edge will be planted with local Western Australian wild flowers and grass trees. which will eventually require little maintenance. When the upgrade is complete we hope the amount of time edging bunkers will be reduced to 150 man hours twice a year. Bunkers will still be machine raked three times per week; we cannot change the way our members think the bunkers need to be prepared for play.

#### **ROD TATT** Cranbourne GC, VIC



When Cranbourne first opened 50 years ago there were 67 bunkers. At present there are 74, with 20 of those being reconstructed since the late 1990's. The original bunkers

had always come under much criticism during winter when they would get very wet and again in summer when they would be exceptionally hard even with constant machine raking. The club made a decision during the late 1990's that would see the start of a bunker reconstruction programme to alleviate these problems. Although it has been a major improvement, they are now taking more hours to maintain than the original bunkers.

Players rarely leave a bunker how they found it and as the imported sand is a little softer on the walls than the native soil, the bunkers can get out of shape very quickly without daily maintenance. With a crew of nine we generally machine rake the original bunkers and hand rake the new bunkers twice a week. This is a recent change in an attempt to have the "new" and the "old" play similar, and not machine raking every bunker every week. Generally two or three staff would do this, taking four to five hours as the tree-lined course can produce a lot of debris!

Players of today certainly focus on the condition of bunkers a lot more and sometimes rate a course on the their condition alone and expect constant depth and texture of sand. I think this comes with the new generation of players who have learnt to play golf using GPS measurements on sprinklers, pin placement sheets and bunkers manicured as much as the playing surfaces. Being a golfer, I have played courses worldwide and believe bunkers should be a true hazard that tests the player. Predictability in bunkers is alien to the traditions of the game and we must fight to keep the true relevance of bunkers alive.

#### **⇒nmit**

#### Turf Management Training in 2008

NMIT's Fairfield campus is offering the following courses in 2008: **Traineeship** (Level 2): one year part-time by day or block release

Apprenticeship (Level 3): by day or block release Recreational Turf Management (Level 3): for those who already have several years of practical experience. A one year program at Fairfield (Monday, 5pm-9pm). Diploma (Level 5): a three year program, either by weekly attendance (Tuesday, 2pm-8.30pm) or by flexible delivery.

#### For further information contact the TURF department

t: (03) 9269 8823

e: peterf-hrt@nmit.vic.edu.au OR e: philf-hrt@nmit.vic.edu.au

Northern Melbourne Institute of TAFE

**}}**}

Quality ndorsed ompany BY KEITH MCAULIFFE, MATT ROCHE AND DR DON LOCH

> Around 25 turf managers from Australia and New Zealand attended the first multi-use stadia workshop conducted in October last year at Suncorp Stadium and Redlands Research Station



# Multi-use stadia workshop and Cynodon wear tolerance trials

e pride ourselves on our nation's sporting prowess and, in general, we place high expectations on our professional athletes and major sporting stadia.

Historically, there was greater acceptance of the playing surface condition. Good or bad, it was considered the same for both sides. However, in this new era of professional sport, the playing surface, like all other aspects of the game, is required to meet a standard. A below par surface will not only impact on the quality of the match, but also the likelihood of player injury.

In order for an athlete or team to successfully perform it is essential that the playing surface be safe, consistent and appropriately managed.

Major stadia and particularly multi-use stadia are continuously under pressure to increase performance and to be at the top of their game to accommodate a wide array of venue hirers such as attracting various sporting events or concerts.

Such a demand places the managers of major outdoor sports arenas with one of the toughest jobs in sport. Imagine having to cope with the realisation that a wrong decision could jeopardise a major event, such as a State of Origin decider or Bledisloe Cup. The reality is that the pressure on top tier turf managers are ever-mounting as more is asked of the playing surface by venue owners. In October 2007, the Queensland Department of Primary Industries and Fisheries Turf Research Group, in collaboration with the New Zealand Sports Turf Institute, hosted an invitation-only workshop at Redlands Research Station and Suncorp Stadium, designed to assist leading multi-use stadia turf managers in coping with today's pressures in managing field performance. The seminar was attended by turf managers from 25 leading Australian and New Zealand sports venues, along with scientists and advisors from Australia, New Zealand and the United Kingdom.

In October, the Queensland Department of Primary Industries and Fisheries Turf Research Group, in conjunction with its New Zealand collaborators, the Sports Turf Institute (STI), hosted an invitation-only workshop at Redlands Research Station and Suncorp Stadium, designed to assist leading multi-use stadia turf managers in coping with ground usage pressure. The seminar was attended by turf managers from 25 leading Australian and New Zealand venues, along with scientists and advisors from Australia, New Zealand and the UK. Sargent kicked the seminar off by clearly defining the challenge facing curators. He recounted his experiences, including Wembley and Millennium stadiums, stating that stadium management was a business and venues needed to maximise revenue in order to survive. He expected his turf management team to come up with workable solutions to any sports surface usage demand.

One of the greatest challenges with playing surfaces in today's major stadia is shade. The audience at the seminar heard from HOK Sport's Shaun Gallagher about new stadium developments, such as Wimbledon

Suncorp Stadium general manager Paul

Redlands trial plots showing differential effects of equivalent amounts of weekly wear on three *Cynodon* varieties ranked with high, medium and low tolerance to wear (left to right)

and Melbourne's Telstra Dome, which have major challenges in acquiring adequate light for optimal grass growth.

Participants also heard from Dr. Andy Newall of the Sports Turf Research Institute, UK, about his work to model lighting requirements of stadia playing surfaces. Andy has worked with many of the world's leading stadia and has developed software and systems to demonstrate light levels on a surface throughout the year and how much supplementary light would be needed to ensure adequate turf growth.

The audience heard how this leading edge technology has been combined with the design and construction of artificial lighting rigs, and that a large number of football grounds in Europe have moved to purchase such rigs.

Telstra Dome is set to become the first



Australian venue to use them on a large scale and will take delivery of its lighting rigs in January ahead of the 2008 AFL season (see ATM Volume 9.6 for Gavin Darby's exclusive in-depth article on the Dome's new artificial lighting system - Ed).

In addition to shade issues, the seminar offered sessions on key design and management issues, including logo marking, use of rootzone stabiliser products and surface performance benchmarking. The audience also heard from leading curators, such as Graeme Logan (Telstra Stadium) and Mark Perham (Eden Park, NZ) about how they have dealt with the challenges faced managing an intensive and multi-use playing surface. A significant part of the first day was allocated to presenting recent and current research being conducted by the QDPI&F Turf Research Group and STI. Presentations were made by Dr. Don Loch, Matt Roche, David Nickson, Keith McAuliffe and Alex Glasgow, followed by a tour of the Redlands Research Station and the various projects being undertaken on the research plots.

Field visits were also made to the Gabba to see Kevin Mitchell Jr. add the finishing touches to the one-day wicket for the Queensland Bulls-Tasmanian Tigers match. The afternoon was then spent at Suncorp Stadium being shown around the venue by Paul Sargent and head curator Mal Caddies.

# ESD Bioremediation ...at it's best



Fully recycle your wash water – up to 3 million litres PA! Fully contain & treat most chemical spills & wash residues

Installed at over 800 facilities including Pebble Beach Golf Links, Spyglass, The Ritz Carlton, Isleworth Country Club, Wimbledon Tennis Club, Briarwood Country Club, Merion Golf Club, The Concession, The Founders Club and many more throughout USA, Europe and now Australia

See the full product range - www.waste2water.com or call Country Club International for an information package



#### The latest <u>fully closed loop</u> washdown system for the golf & turf industries from ESD Waste2Water USA has now been released in Australia.

ESD Waste2Water is the world's major supplier of golf course bioremediation washdown systems – now being introduced into Australia and New Zealand through Country Club International.

All models are closed loop systems which means all water is fully recycled and there is no risk of environmental contamination.



25 Cumberland Drive, Seaford 3198 FREECALL 1300 138804 Email: infor@countryclub.com.au Representatives available in all states for information and demonstration. Typical damage imposed to the test facility at the completion of wear testing

During the Suncorp Stadium visit Matt Roche from the QDPI&F demonstrated the methodology used to measure and benchmark surface quality and performance at elite grounds such as Suncorp and the Queensland Sports and Athletics Centre (QSAC).

This was later followed up by an open forum on the need for surface performance testing and benchmarking and how such information could be used as a management tool.

There was general agreement that there is a need for standardisation of the methodology being used in order to allow 'apples for apples' comparison, and both the DPI&F and STI are working to address such concerns.

#### WEAR TOLERANCE VISUAL ASSESSMENT EXERCISE

Of particular interest to participants was the couch cultivar wear trial being undertaken by the QDPI&F, which has clearly highlighted significant differences in the wear tolerance and recovery of different couch types.

Workshop attendees were asked to rank the eight *Cynodon* varieties in a replicated wear trial according to their visual tolerance to wear after 14 weeks of wear beginning on 5 July 2007. The eight varieties tested included Conquest, Grand Prix, Hatfield, JT1, Legend, Princess, TifSport and Wintergreen.

The full experiment involved five different wear treatment combinations imposed on strips running across plots of the different varieties, which had been planted in a randomised block design.

The five wear treatment combinations were pure *Cynodon* with weekly, fortnightly, or no wear, and ryegrass-oversown *Cynodon* with fortnightly or no wear (two treatments). Over each two-week period (three treatments), the same total amount of wear was applied to both the weekly and the fortnightly wear treatments using a Brinkman-type machine with two rollers rotating at different speeds to cause scuffing of the turf surface. (Further information on the trial setup and earlier wear studies can be found in Loch & Roche 2007).

Visiting curators were asked to rank the eight varieties within each of the four



randomised blocks according to their tolerance for wear within each block, with the best variety in each block scoring eight and the worst scoring one. Tied rankings were allowed, with two varieties coming equal third, for example, both scoring six and the next variety (fifth) scoring four.

For the sake of simplicity, this practical exercise was restricted to the weekly wear on pure *Cynodon* treatment, which was showing the most dramatic and obvious effects of wear. For comparative purposes, rankings of the same plots were also made by three Redlands scientists.

The ranking scores from the curators group (20 samples) and the Redlands group (three samples) were analysed separately by standard analysis of variance (ANOVA) techniques using Genstat v.9.

This particular exercise conducted during the stadia workshop visit provided both researchers and the attending turf managers with a snapshot of the turfgrass quality/wear tolerance and resistance on the day that ratings were undertaken.

Overall, both groups placed the eight *Cynodon* varieties in the same order of tolerance to wear as shown in Table 1. The effect of wear on examples of grasses showing high, medium and low wear tolerance is illustrated in the photo on page 41.

Additional information on wear tolerance studies of *Cynodon* and other warm-season turfgrass cultivars, along with information on current trials being undertaken by the QDPI&F Turf Research Group can be found at www.dpi. qld.gov.au/turf. While the two-day workshop only scratched the surface of several critical issues facing participants, it was very apparent that participants were well aware of the need to embrace new technology to cope with the challenges being laid down by major venue owners.

Participant feedback strongly supported the need for more seminars of this nature and discussions have already been held on the likelihood of undertaking a second workshop in the winter of 2008. If you would like further information or wish to register your interest, contact Matt Roche via email Matt.Roche@dpi. qld.gov.au.

#### TABLE 1. MEAN RANKING SCORES FOR WEAR TOLERANCE OF CYNODON VARIETIES AS RATED BY CURATORS AND REDLANDS SCIENTISTS

Cynodon Variety	Curators <sup>1</sup>	Redlands <sup>1</sup>
А	5.6c	6.3bc
В	7.2a	7.3a
С	6.3b	6.8ab
D	1.7g	1.4e
E	4.0ef	4.1d
F	2.1g	2.0e
G	5.2cd	4.8d
Н	4.2e	4.0d
(LSD=0.05)	0.5	1.0

<sup>1</sup> Ranking scores followed by the same superscript letter are not significantly different.

Groundsmaster 7210® now only \$27,582, was \$31,900 Groundsmaster 7200® now only \$24,588, was \$27,500 Includes a \$500 Free fuel voucher\*.

# 

Buy any new Groundsmaster 7200/7210 before March 31, 2008 and Toro will not only give you unbeatable prices, they will provide \$500 worth of Caltex fuel vouchers to assist your business.

#### Features includes:

- Low centre of gravity for improved hillside stability
- Liquid cooled 35bhp turbocharged diesel engine
- PTO shaft-driven mower deck
- Industry's toughest spindle assembly
- Direct drive hydro transmission with a wet disc clutch

For more information speak with your local Toro representative. For customer service call 1800 356 372

or visit www.toro.com



Organic matter accumulation can be detrimental to the physical properties of sand-based putting greens. Aggressive verticutting and core aerification using closely spaced tines are two relatively new management options effective in removing such material

American researchers have conducted studies to determine how cultivating a sand-based putting green with various aggressive verticutting and core aeration treatments affects rootzone organic matter content and turf.

utting greens constructed according to USGA guidelines contain a medium to coarse sand rootzone, which provides rapid water infiltration, drainage and oxygen diffusion, while maintaining acceptable water retention (7).

It is a considerable investment for a golf facility to construct USGA putting greens, so it is important that they are maintained to perform as designed with regard to water retention and drainage.

It is not uncommon for newly constructed creeping bentgrass (*Agrostis stolonifera* L.) greens to perform very well during the first few years following establishment, but then decline in subsequent years, especially during periods of high temperature and humidity.

This is likely the result of the rootzone physical properties changing over time, especially near the surface where organic matter (OM) accumulates. It has been demonstrated that OM concentrations > 4-5% in a USGA rootzone will decrease water percolation through, and air movement into, the rootzone (5, 6), resulting in wetter than desirable conditions.



# Cultivating to manage organic matter

Such conditions can be devastating when temperatures are high and bentgrass respiration rates (and rootzone oxygen requirements) are greater than oxygen diffusion rates into the rootzone, ultimately causing summer decline.

Recent cultivation techniques that may be effective in reducing OM and maintaining desirable rootzone physical properties include aggressive verticutting and core aerification with closely spaced tines. Verticutting equipment, such as the Graden GS04, has been demonstrated to aggressively cut channels through surface organic layers in putting greens, removing more OM than traditional core aerification treatments.

However, some turf managers have expressed concern with the difficulty involved in backfilling cultivation channels and slower recovery times associated with aggressive verticutting.

Another recent trend in putting green core aerification is the use of more closely spaced tines, either by retrofitting older aerification units with adapters or through the introduction of new aerification units with closer tine spacing. It is important to note that superintendents and turf managers can quadruple the affected area when cultivating putting greens by reducing the tine spacing in half. It also stands to reason that decreasing tine spacing should not affect turf recovery since individual hole sizes do not change. This may allow for a more aggressive OM control approach without the limitations that are associated with aggressive verticutting practices.

Another factor to consider is tine depth. A moderately aged USGA putting green typically has desirable physical properties throughout the profile, except near the surface where OM has accumulated. So, it is probably not beneficial to remove desirable rootzone sand from below the surface OM layer during aerification.

Under such conditions, an aerification tine only needs to be long enough to completely penetrate and remove cores from the OM layer. Longer tines would only result in excess sand debris being pulled to the surface, increasing the labour required to remove the debris and the amount of sand needed to backfill aerification channels. The Graden verticutter is capable of cutting channels through the surface organic layer of a putting green rootzone

The objective of this research was to determine the effects of various aggressive verticutting and core aerification treatments on surface OM removal from a sand-based putting green. Various verticutting blade widths and core aerification tine diameters, spacings and depths were investigated.

#### CULTIVATION EXPERIMENTAL METHODS

A two-year experiment was initiated in the spring of 2003 at the University of Arkansas Research and Extension Center (Fayetteville, AR) on a one-year-old Penn G2 creeping bentgrass putting green built according to USGA recommendations (3, 7).

The research green was mowed six days a week at a 0.125 inch height (3.1mm) and N, P and K were applied at annual rates of 3.5, 0.5 and 3.5 lb 1000 ft-2 (1.59, 0.23, 1.59 kg/92m2) respectively. Deep irrigation was applied as needed to encourage root growth and prevent drought stress. In addition, light sand topdressing was applied bi-weekly throughout each growing season.

Cultivation treatments were applied using either a Graden verticutter or a Toro greens aerator in the spring and autumn of each study year. Verticutting treatments were made



to a 1 inch depth (25mm) to ensure complete penetration through the thatch/mat layers and included varying blade widths (1, 2 and 3mm).

Core aerification treatments included various combinations of tine spacing (1.25x1.50 or 2x2.5 inches), tine diameter (1/4 or 1/2 inch), and tine penetration depth (1.5 or 2 inches).

Cultivation treatments were made to individual plots measuring 5x20ft (1.5mx6.1m) and each treatment was applied to four replicate plots.

The day before cultivation treatments were applied, the percent OM in the surface inch, and from 1 inch to the depth of cultivation, was measured in each plot. Immediately following cultivation treatments, scoop shovels were used to collect the debris (sand and OM) from

each plot. Once the debris was collected. sand topdressing was applied and brushed into the turf until the cultivation channels were filled.

The amount of debris removed and topdressing sand incorporated into cultivation channels were recorded for each plot. The OM in the cultivation debris originating from the surface inch was calculated based on the distribution of OM from the surface inch and to the depth of cultivation (evaluated the day prior to treatment applications). In addition, each plot was rated for recovery and overall turf quality twice weekly following cultivation treatments.

#### ORGANIC MATTER REMOVAL

All of the verticutting treatments removed more



**Cesearch** 

surface OM than any of the core aerification treatments (Fig.1). In fact, the 3mm verticutting treatment removed more than four times the amount of OM than each core aerification treatment.

There was not much difference in OM removal between the 1mm and 2mm verticutting treatments; however, they only removed about half the OM compared to the 3mm treatment. Turf managers with sand-based rootzones very high in OM content should consider aggressive verticutting to quickly remove excessive OM near the rootzone surface.

Among the core aerification treatments, the larger diametre, closely-spaced, deeper penetrating treatment removed the most OM from near the rootzone surface.

Although core aerification was not as effective as verticutting in removing large amounts of OM from the rootzone, it was more efficient in completely penetrating through the OM layer without bringing excess sand material to the surface, especially those treatments with shorter tines.

Verticutting treatments and the deeperpenetrating hollow tines had significantly less OM in the cultivation debris compared to the more shallow-penetrating hollow tines (Fig. 1).

Cultivation debris that was not surface OM was predominantly rootzone sand with desirable physical properties and thus could be considered wasteful to deal with when cultivating.



Once the debris was collected, sand topdressing was applied and brushed in

### TURFGRASS RECOVERY AND QUALITY

Turfgrass recovery evaluations following cultivation are summarised in Figure 2. To improve the clarity of Figure 2, the 2mm verticutting treatment and core aerification treatments with 1.5 inch deep tines were not included. However, it should be noted that the 2mm verticutting treatment recovered similarly to the other verticutting treatments, and the 1.5 inch tine depth treatments recovered similarly to those with 2.0 inch tines.

Cultivation channels healed over more quickly for core aerification treatments



compared to the verticutting treatments. The time required for the verticutting treatments to heal following cultivation was nearly 60 days, approximately twice that necessary for turf that was core aerified.

This difference was likely the result of the problems in backfilling cultivation channels with sand. Once the cultivation debris was removed from those plots, many of the verticutting channels had partially closed, making it difficult to fill the channels with sand and smooth the surface.

Aerification holes created by coring treatments were less prone to collapsing and were more completely filled with topdressing sand, creating a smoother surface which hastened recovery.

In fact, in all plots that were core aerified, the amount of topdressing sand that was incorporated back into the turf canopy was greater than 100 per cent of the volume of the debris that was removed during cultivation. In contrast, only 70 per cent of the volume of cultivation debris could be incorporated back into the canopy as topdressing sand for turf that was verticut.

After this research was completed, a new Graden verticutting unit was released which verticuts and backfills channels with sand in a single operation (1). Turf recovery from aggressive verticutting would likely be enhanced with sand injection, although at this time no published research has documented this.

Among core aerification treatments, recovery time was affected predominantly by

tine diameter. Turf cored with 1/4 inch diameter tines recovered in 14 days, about half the time of turf treated with 1/2 inch tines. Neither tine depth nor tine spacing affected turf recovery in this study.

Consequently, a turf manager can use a closer tine spacing to affect a larger percentage of the putting surface, without affecting recovery time. This is a better alternative to increasing tine diameter, which would also increase the affected area, but would delay recovery time of the turf surface.

In addition, a shallow tine is preferable to a deeper tine (so long as the tine completely penetrates the surface organic layer), since less debris is brought to the surface, and the amount of OM removed and recovery time is equivalent.

Cultivation treatments did not affect turf quality in this trial, except during periods of recovery from treatment. This study was conducted in a full-sun location with considerable air movement, resulting in minimal disease pressure and summer stress symptoms. Cultivation treatments would have



Fig 2: Turfgrass recovery from cultivation as affected by cultivation treatment. Data collected September through November 2003 in Fayetteville, AR. Error bar represents least significance difference value between treatments within a single evaluation date

been more likely to enhance turf quality in an environment with limited sun exposure and air movement.

Although visual quality was not affected by cultivation treatment in this study, untreated plots were considerably softer by the end of the study and probably had less desirable ball roll characteristics. In a follow-up study on the same plots, uncultivated turf consistently had lower hardness values than all treated turf (2).



#### ORGANIC MATTER CONTENT

After three sets of cultivation treatments and 14 months after the study was initiated, aggressive verticutting was most effective at minimizing OM content in the surface inch of the rootzone (Fig. 3). In particular, the 3mm verticutting treatment reduced surface OM content significantly below that of the untreated control and all core aerification treatments. These results are not surprising considering the large amounts of OM brought to the surface by verticutting treatments (Fig. 2).

Although all of the closely spaced core aerification treatments resulted in lower surface OM content than the control, differences were slight and not statistically significant after three sets of treatments. It is important to note once again the ideal environment (full sun and air movement) under which this study was conducted, providing favorable conditions for microbial breakdown of OM.

A putting green with limited air movement and sun exposure would probably have greater moisture content at the rootzone surface, limiting microbial activity. Under such conditions, core aerification treatments would be expected to significantly reduce surface OM content compared to untreated turf.

#### CONCLUSIONS

Verticutting treatments were more aggressive and effective at removing OM from the surface inch of the putting green rootzone than core aerification treatments. However, the verticutting treatments removed a disproportionately large amount of debris and recovered slower.

Therefore, aggressive verticutting may be



Although verticutting treatments (left) removed more surface organic matter, plots that were core aerated (right) recovered significantly faster

most useful when a large amount of OM must be removed at once and recovery time is not a primary consideration, such as a putting green renovation.

Core aerification with closely spaced tines may provide more general surface OM maintenance for putting greens that must return to a high level of quality shortly following cultivation.

#### REFERENCES

1. Dickson, S., K. Ross, T. Girardi, and T. Bryant. 2007. Garden with sand injection. TurfNet Mon. 14(1):p. 6-7.

2. Kauffman, J.M. 2007. Long-term cultivation effects on rootzone properties of a sand-based putting green. M.S. thesis. Univ. of Arkansas, Fayetteville.

3. Landreth, J.W. 2005. Cultivation techniques to maximize the efficiency of organic matter



removal from sand-based putting greens. M.S. thesis. Univ. of Arkansas, Fayetteville.

**4. Huang, B., X. Liu, and J.D. Fry. 1998.** Effects of high temperature and poor soil aeration on root growth and viability of creeping bentgrass. Crop. Sci. 28:1618-1622.

5. Murphy, J.W., T.R.O. Field, and M.J. Hickey. 1993. Age development in sand-based turf. Int. Turf. Soc. J. 7:464:468.

**6. Neylan, J. 1994.** Sand profiles and their long term performance. Golf & Sports Turf. Aus. Aug:22-27.

7. USGA. 1993. USGA recommendations for putting green construction. USGA Green Sect. Rec. 31(2):1-3

#### ACKNOWLEDGMENTS

The authors thank the United States Golf Association's Turfgrass and Environmental Research Program (USGA TERO) and the University of Arkansas Division of Agriculture for the financial support of this research.

Josh Landreth is a research technician, Doug Karcher is an associate professor, and Mike Richardson is a professor in the Department of Horticulture at the University of Arkansas.

Australian Turfgrass Management Magazine is grateful for the assistance of the authors and the USGA TERO in publication of this research (USGA TERO Vol 6, No. 19: Oct 1, 2007).

Fig 3: OM content in the surface inch of the rootzone as affected by cultivation treatment. Data collected June 21, 2004, two months after the third set of treatments were applied. Treatments with bars sharing a letter are not significantly different.



# Quality Comfort Control

Superior ergonomics and engineering make this mower extremely operator and mechanic friendly. The G-Plex III offers excellent quality of cut with ease of use and comfort for the operator. Unique paddle control to lift and lower cutting units.

JACOBSEN

For more information contact: Greg Clark; 0408 522 111 - General Manager Stephen Clifford; 1800 720 776 - Product Manager & Power Turf: SE QLD

**Bill Stevens; 0407 550 206** - Territory Manager: TAS, VIC, SA, WA

Aaron Greenhalgh; 0407 513 207 - Territory Manager: ACT, NSW, QLD, NT



www.powerturf.com.au



Huntingdale Golf Club greenkeeper racey Allen gives the par 5 7th a shave before the second round at the 2007 Mastercard Masters.

# Huntingdale crew continues the tradition

Huntingdale Golf Club lived up to its ability to produce some of the best finishes in professional golf following the 2007 Mastercard Masters held in November. Aaron Baddeley added the coveted Gold Jacket to his wardrobe after edging Swede Daniel Chopra in a four-hole playoff hole, continuing the tournament's uncanny knack of playoff finishes. As he has done for the past six years, Huntingdale superintendent Michael Freeman had the Melbourne sand belt course presented in superb condition and his crew deserved the many accolades directed their way during the event's coverage. Conditions during tournament week tested the ability of Freeman's charges, with back-to-back 37-degree days at the start of the week contrasted by a 30mm dumping of the wet stuff prior to the first round. Freeman's usual crew of 15 swelled to around 25 for the tournament with volunteers coming from country courses Leongatha, Mt Beauty and Corowa and as far afield as New Zealand and Scotland.



#### **ROYAL MELBOURNE EAST DEBUTS IN TOP 100 COURSES**

R oyal Melbourne's East Course has been rated in the world's top 100 golf courses for the first time following the recent release of Golf Magazine's elite course listing.

In previous rankings, Royal Melbourne's Composite Course was a perennial top 10 entry, however for its latest listings the US-based magazine has decided to rate both the East and West courses separately. The end result is that the East Course comes in at 72nd while its much famed sibling drops a few spots to 15th.

Pine Valley in New Jersey continues to be the judges' favourite, topping the rankings for yet another year, followed by Cypress Point, St Andrews Old Course and Augusta National. Pebble Beach jumps one spot to 5th at the expense of Shinnecock Hills.

The inclusion of Royal Melbourne's East Course means Australia now has six courses rated in the top 100. After Royal Melbourne's West Course, Kingston Heath is the second highest ranked course, coming in at 26th, down six from the last rankings.

The big Australian mover is Tom Doak's Tasmanian gem Barnbougle Dunes. Debuting 49th when the last rankings were released, Barnbougle has leapt up to 35th and is now ranked one spot ahead of New South Wales Golf Club in Sydney, which drops two places.

> With holes like the par 3 15th, it's no wonder Port Fairy has broken into Australia's top 50 public courses

Royal Adelaide Golf Club rounds out the Australian contingent dropping from 54th to 75th.

Across the Ditch and two New Zealand courses hold their own in the top 100 with Cape Kidnappers in Hawkes Bay ranked 47th and Kauri Cliffs in the upper North Island 63rd.

Meanwhile, the 2008 Golf Course Guide has released its list of the top 100 public courses in Australia. Not surprisingly Barnbougle Dunes retains its top spot and much interest will surround the development of the second 18-hole course which is due to get underway midway through 2008.

Kennedy Bay came in second, while Joondalup (Quarry/Dunes) moved into third at the expense of Laguna Turtle Point. According to the judging panel the reason for Joondalup's elevation was due to "stunning conditioning" which is a credit to former superintendent Jeff Lane who departed the Perth course in late 2007. Moonah Links' Legends Course jumped up a spot while the Open Course dropped down two spots to 10th.

Some of the big movers were Pacific Harbour (up 10 places to 14th), St. Michaels (top 100 to 33rd) and The Cut in WA (up from 21st to 8th). The Graham Marsh-designed Eynesbury Golf Course in Melbourne's west debuts at 35th (see profile on Eynesbury superintendent Garry Collins in Offshoot -Ed) while Victorian links gem Port Fairy breaks into the top 50.



#### **SHARK RECEIVES GCSAA'S HIGHEST HONOUR**

ustralian golfing institution Greg Norman is set to be honoured by the Golf Course Superintendents Association of America (GCSAA) in late January.

The World Golf Hall of Fame member will be presented the GCSAA's highest accolade – the Old Tom Morris Award – at the opening session of the association's 2008 conference to be held in Orlando, Florida.

Norman will join an exalted list of previous winners including inaugural winner Arnold Palmer, Jack Nicklaus, Gene Sarazen, Robert Trent Jones Sr., Pete Dye, Byron Nelson and Ben Crenshaw.

"I have always had the utmost respect for the GCSAA and I believe its members are truly the unsung heroes of our sport," Norman said. "It is a distinct honour to be selected for the Old Tom Morris Award and to join this distinguished list of past recipients."

The Old Tom Morris Award is presented by the GCSAA each year to an individual who "through a continuing lifetime commitment to the game of golf has helped to mould the welfare of the game in a manner and style exemplified by Old Tom Morris." Morris (1821-1908) was greenkeeper and golf professional at the St. Andrews Links Trust Golf Club of St. Andrews, Scotland, a four-time winner of the British Open (1861, '62, '64 and '67) and ranked as one of the top links designers of the 19th century.

Labelled the 'Great White Shark' by a headline writer for the Augusta Chronicle after the first round of the 1981 Masters, Norman achieved 91 professional victories, including 20 PGA Tour titles and two British Open Championships (1986 at Turnberry and 1993 at Royal St. George's).

A longtime supporter of the golf course superintendent profession, Norman is a vocal leader in the movement to make the game of golf more compatible with the environment and is a trustee of GCSAA's philanthropic organisation, The Environmental Institute for Golf.

"Greg Norman truly embodies the spirit of this award," says GCSAA President Ricky D. Heine, CGCS. "A true friend to our profession and association, he has made countless contributions to the game and is therefore a deserving recipient."



Greg Norman will receive the GCSAA's Old Tom Morris Award at the upcoming conference in Florida



Bayer Environmental Science

#### RESTORE YOUR TURF'S PERFECT FINISH IN RECORD TIME

Chipco Rovral GT controls Dollar Spot and a range of other turf diseases within 24 hours – and in most cases keeps working for 14 days. Mixed with Chipco Signature, Chipco Rovral GT will also beat the stress of Summer Decline. So for performance that outstrips other turf fungicides, insist on Chipco Rovral GT.

Bayer Environmental Science 391 - 393 Tooronga Road East Hawthorn, Vic. 3123. Ph. (03) 9248 6888 www.bayercropscience.com.au ABN 87 000 226 022



Rovral® and Chipco® are Registered Trademarks of Bayer. Bayer Environmental Science is a business group of Bayer Cropscience Pty Ltd.

#### MAXICOM<sup>2</sup> WINS SMART APPROVED WATERMARK

Rain Bird's Maxicom<sup>2</sup> has become the first irrigation central control system to receive the prestigious Smart Approved WaterMark Award certification in Australia.

With features such as multiple scheduling, weather monitoring, automatic and manual control options, flow management and Cycle+Soak, Maxicom<sup>2</sup> is designed for large commercial and industrial applications such as those managed by local councils, sporting clubs, retirement villages and park and recreation departments.

Hundreds of sites and weather sources can be controlled and monitored from one location through telephone, cellular modem, radio (450-470 MHz), spread spectrum radio (900 MHz), direct cable connect, short-haul modem, fibre-optic modem, Ethernet device server, Wi-Fi device server, or fibre-optic device server communication.

Now available in version 3.5 with the additional features of Low Flow Alarm and Odd/Even Scheduling, Maxicom<sup>2</sup> is sophisticated yet easy to operate. And it's

#### HOLE, REIN SHARE AGCSA BOARD TRADE REP ROLE

Sam Hole (Syngenta) and Robert Rein (Toro Australia) have been elected as industry representatives to offer opinion and feedback to the Australian Golf Course Superintendents Association (AGCSA) board.

Hole and Rein were elected by industry peers following a decision by the AGCSA in late 2007 to welcome a trade representative to sit in on board meetings to provide advice on certain matters affecting the turf industry and the companies which service it.

The suggestion of a trade representative initially came from Globe Australia's John Cooper and was well received by the AGCSA Board and management at its September 2007 meeting. Shortly after Hole and Rein were chosen to act as trade representatives with Rein sitting in on the November 2007 board meeting.

AGCSA trade members who would like to raise any issues or provide feedback to the AGCSA can get in contact with either Sam or Robert who will then have the opportunity to raise it with the AGCSA Board.

#### DSMA LABEL CHANGES GET APVMA APPROVAL

Barmac Industries recently received approval from the APVMA for a number of improvements



one of the most water efficient systems as well after judges awarded it the Smart Approved WaterMark in early September 2007.

For further information on Rain Bird's Maxicom<sup>2</sup> visit www.rainbird.com



to the label of its product DSMA Clear Selective Herbicide. Three major changes to the use patterns on the label have been made and these are:

 The required water volume on the old label was not consistent with the application methods used by modern turf managers. After extensive trial work, Barmac was able to demonstrate to APVMA that the product was safe and efficacious at water volumes as low as 450 litres per hectare. The label now has a range of water volumes approved.

Reduced application rates where multiple

#### PRICE RIGHT FOR TORO

As part of its continued emphasis on service and technical support, Toro Australia has recently appointed a specific field engineer to oversee technical training and support within Australia and Asia

Garry Price has been with Toro for eight years and in that time has built up a solid reputation with dealers and superintendents.



applications are planned have now been included on the label. Users can now legally reduce the rate of product when they plan to repeat the application after 7-14 days. This allows for more flexibility in spray programmes and will also reduce the discolouration of the turf.

• The product is now registered in Tasmania.

Barmac general manager Wayne Sear says the new labels will start appearing in the market over the next few months. Interested parties can download the approved label from the PUBCRIS database on the APVMA website www.apvma.gov.au

#### NAME CHANGE FOR AGRILINK

South Australian-based Agrilink, the company behind GolfLinx water management solutions, has changed its name to AquaSpy.

AquaSpy Group designs, produces and distributes moisture sensors and smart information technology which saves water and maintains optimum plant health. There are more than 50,000 AquaSpy sensors in use around the world.

"Our new identity sends a message that AquaSpy Group is positioned to provide immediate solutions for people who want to save water, save money and reduce their ecological footprint," says AquaSpy Group chief executive Nigel Hennessy.

AquaSpy Group last year launched GolfLinx, taking the company's water saving technology directly to the golf course industry. GolfLinx provides turf managers with a visual, two dimensional 'x-ray' below the turf, replacing traditional manual methods of soil moisture measurement. By creating smart irrigation control systems, AquaSpy products measure soil moisture, salinity and temperature levels for best practice irrigation.

His new role, officially titled Field Engineer, Turf Equipment Sales and Service, will encapsulate a number of important new areas including the provision of technical assistance to company personnel and end users as well as on-going training.

Price will be based at Toro's Victorian headquarters in Braeside, but will travel extensively to Toro's Asian business centres including China, Korea, Japan and India as part of this new role.

For further information contact Toro Australia on (02) 8887 4100. According to Hennessy water consumption from irrigation can be reduced by 30 per cent or more with AquaSpy and produces better results at a fraction of the cost of desalination or recycling.

Hennessy says the new identity was being rolled out across AquaSpy Group's operations in Australia and the US. AquaSpy Group is based in Adelaide and has two offices in Santa Rosa and Santa Ana, California. It also has staff based in a number of areas around regional Australia.

For more information, visit AquaSpy's website at www.aquaspy.com

#### KUBOTA ON THE MOVE

Kubota Australia is set to shift its Melbourne headquarters in 2008. The company, which is in its 30th year in Australia, will move from its existing Tullamarine location to a new warehousing facility in Truganina, near Laverton, in Melbourne's south west.

The new 15,000m<sup>2</sup> facility, which will cost \$18 million, represents a 50 per cent increase on Kubota's current storage capacity and will help improve the company's ability to deliver machinery to dealers.

#### LANDGUARD WINS NATIONAL AWARD

Orica Watercare's remediation business was awarded the technology and innovation award for its Landguard technology at the annual Agribusiness Awards for Excellence, held last October.

The award recognises innovation of high value to the customer and demonstrated high potential profitability through successful adoption. The Agribusiness Awards for Excellence were established by Monash University in 1996 and are recognised as the premier national awards for the agribusiness industry.

Landguard enables the rapid treatment of pesticide residues. Through hydrolysis of the pesticide, Landguard creates by-products of significantly reduced toxicity and greater biodegradability than the parent pesticide.

Commercial manager of the remediation business Kate Dawson believes this product is of great importance to the agricultural industry, at a time when environmental issues such as water quality are critical.

"Landguard provides a real opportunity

eri Business Business

Science and Technology president Claude Gauchat presents the award to Orica's Kate Dawson

for best practice management to treat contaminated soil and water," Dawson says.

"Organophosphate compounds can take years to break down naturally and can cause great environmental harm. The benefits of using Landguard include reduced environmental impact, lower risk to human health and the reduced public liability of the greater agricultural industry. "



#### BY BRETT ROBINSON

vater ma

Round three of the Federal Government's Community Water Grants scheme was announced late in 2007 with over 100 golf courses successful in receiving grants for various water-saving initiatives. ATM looks at who some of the big winners were.



Golf clubs received more than \$5.4 million in funding for water-saving projects from the latest round of the Federal Government's Community Water Grants scheme

# **Clubs reap round three water grants**

G olf clubs around Australia have again benefited in the latest round of the Federal Government's Community Water Grants scheme, with a total of 114 projects receiving in excess of \$5.4 million.

Successful round three projects were announced in early November 2007, with golf clubs in Victoria, NSW, South Australia, Tasmania, Queensland and Western Australia successful in receiving grants for a wide range of water-saving projects. A number of sporting facilities and bowling clubs were also successful in obtaining grants.

The round three allocations take the total amount of grants given to golf clubs across the three rounds to nearly \$14 million, with around 300 projects benefiting since 2006.

Of the golf club projects awarded in round three, Victoria came out on top with 58 projects obtaining a combined total of \$2.6 million, representing an almost twofold increase from the second round announced in November 2006. Thirty NSW projects received \$1.8 million in funding, a slight decrease from round two, while Western Australia had its most successful round with six clubs collecting a total of \$223,000. Projects that received grants in round three included:

- Irrigation system upgrades to improve water use efficiency and to cater for treated effluent/waste water coming online;
- Stormwater diversion and harvesting;
- Installation of waste treatment systems to recycle wash water and construction of washdown bays;

- Installation of rain water tanks to capture water from maintenance facility and clubhouse roofs;
- Construction of dams to store stormwater/ waste water and increasing existing storage capacities;
- Construction of wetlands to aid in nutrient stripping and to reuse water for irrigation;
- Sewage recycling schemes;
- Creek stabilisation;
- Bore capping; and
- Groundwater conservation.

Among the recipients in round three was Portarlington Golf Club on Victoria's Surf Coast. Superintendent Steve Burchett says the club has been in negotiations with Barwon Water regarding the use of recycled water from its treatment plant since June 2006 and the \$100,000 in grant money will be used to bring this onto the course.

"Fortunately the club has been progressive in the pursuit of securing its own water supply for a few years now," says Burchett. "We currently harvest stormwater from the town before it goes out to sea. We divert the water into an underground pump well then transfer the water via pump and underground piping about two kilometres to the club's storage facility. When it rains this is a fantastic resource for the club.

"To complement this we now have the ability to access recycled water. The grant will be used to lay pipe underground about five kilometres to the golf club where we are able to shandy this water with the stormwater we already harvest. The club's storage capacity is now around 47 megalitres.

"Future water projects include making provision for greater stormwater harvesting and we are currently pursuing options with a proposed nearby housing estate. We will also be planning to increase our storage capacity on site by about 20 megalitres. We will also be looking at another pump well situated on another ocean outfall not far from the club.

"We are committed as a club to reduce our need for potable water to the clubhouse only and would like to be self sufficient in regards to water supply. Obviously through the water grants scheme we are going a long way towards that and we have also had fantastic support from Barwon Water, Geelong City Council and the EPA."

Not far down the road, and Barwon Heads Golf Club was also one of the big winners from the latest round of allocations. Attendees of the 24th Australian Turfgrass Conference in Cairns would have heard superintendent Peter Frewin talk about the extensive undertaking by the club to secure its water source, and the \$223,636 received in round three will be ploughed into this wide-ranging project.

Elsewhere in Victoria, Riversdale Golf Club (superintendent Michael Picken) received a grant of \$125,000 which will be used to upgrade the course's 1970s-era irrigation system.

Put together by club general manager Bob Taylor, the Riversdale application comes on the back of extensive stormwater harvesting work already undertaken by the club in recent years,

#### TABLE 1. FEDERAL GOVERNMENT COMMUNITY WATER GRANTS TO GOLF COURSES - ROUNDS 1-3

	Round 1 (	Mar 06)	Round 2 (	Nov 06)	Round 3 (	Nov 07)
State	Projects	Grants*	Projects	Grants*	Projects	Grants*
VIC	28	1,001,000	23	1,072,000	58	2,618,000
NSW/ACT	23	886,000	37	2,039,000	30	1,862,000
QLD	16	545,000	10	622,000	11	422,000
SA	15	528,000	9	366,000	5	193,000
WA	5	186,000	3	137,000	6	223,000
TAS		210,000	7	594,000	4	121,000
TOTAL	92	\$3,356,000	89	\$4,830,000	114	\$5,439,000

\* These figures, taken from the www.communitywatergrants.gov.au website, have been rounded to the nearest thousand.

which included the extensive refurbishment of Damper Creek that runs through the property. The new irrigation system, costing around \$750,000, will be installed starting this year with a completion date of 2009/10.

North of the border and two of the big grant recipients in NSW were Cronulla and Mudgee golf clubs, between them netting almost \$500,000. Mudgee received \$212,000 to upgrade its irrigation system, while at Cronulla, home to superintendent Paul Duffy, a \$272,727 grant will also go towards an irrigation system overhaul.

The new system, which will cost Cronulla about \$1 million, will hook up to a pipeline to be built by Sutherland Council, feeding tertiary treated effluent water from the Cronulla Sewerage Treatment Plant. The pipeline initiative and irrigation upgrade will enable Cronulla to significantly reduce its reliance on bore water from the Botany Aquifer and potable water from the Sydney Water system, with estimated savings of over 100 megalitres from these sources.

The council's pipeline will also service Woolooware Golf Course, as well as the Cronulla Sharks and Toyota facilities, schools and numerous playing fields, ultimately reducing the amount of effluent water flowing into Bate Bay.

Round four applications of the Community Water Grants scheme are expected to be called for in the first half of 2008. Golf clubs can register for information updates through the scheme's website (www.communitywatergrants.gov. au) as well as find out more information on guidelines and how to apply.

Footnote: The Australian Golf Industry Council is currently looking at making approaches to the federal and state governments to support the AGCSA's water initiative and long-term security of water for the golf industry.

#### What the Superintendent needs . . . . e-par / Safetee pro

Our popular **Safetee Pro**<sup>®</sup> OHS diary system is now available to **e-par**<sup>®</sup> users online at **www.epar.com.au**.

Designed to keep your staff, contractors and visitors safe, the system provides regulatory documentation as well as a full range of Risk Assessment and Safe Work Procedure templates. These assets are provided from the collective resources of our member clubs and turf facilities (see below) – "it's a real industry collection facilitated by the experts at **e-par**<sup>®</sup> **Safetee Pro**<sup>®</sup>, we couldn't do without it." *David Warwick, Superintendent, Avondale Golf Club* 

...but don't just take our word for it – ask some of our partners in safety..... Avondale, Manly, Mona Vale, Pennant Hills, Twin Creeks, Kooindah Waters, Newcastle, Dubbo, Pacific Dunes, Mollymook, Sea Temple, The Sands, Kingswood, Glenelg, Royal Adelaide, Brookwater, Lakelands, Pacific Harbour, Settlers Run. . . For more information and order forms for **Safetee Pro**<sup>®</sup> and all training packages please go to www.epar.com.au







#### BY GREG STRINGER

have seen and read in the last edition of Australian Turfgrass Management magazine about how the turf technician needs to be up to date with the latest technology, especially with all the advances in electronics and hydraulics, even now touching on equipment such as hydrogen powered machines.

The fact still remains, however, that even with the latest technology, machines and components can and do break down, whether due to a mechanical fault or from an operator error. As much as companies manufacture machines and parts to high standards, quite often once a machine has been put into service there is a tendency to find weak points or maybe an area which needs to be changed to suit the prevailing conditions.

Following are three areas, not necessarily high tech, where a turf technician once again comes into his own with his innovation and ingenuity.

#### MODIFY

It is quite easy to dismantle an item and replace it with a new part, but quite often this part or item will wear out or break again. This is where the ever-thoughtful technician relies on his experience and training to modify the existing components to make them perform just as they did when new or perform even better.

Sometimes the modification can be carried out on new machines or components, perhaps for safety reasons or maybe, as previously stated, to suit prevailing conditions. An example of this is where a new bunker rake had been purchased and put into service but because of the type of bunker sand and underlying surface the new tines had to be modified (shortened) so as to effectively groom the bunker.

A different example was on our golf course where we had a Toro 4500-D that kept wearing



Improvising is a means of making do with basic items at hand. Here some electrical conduit had been used as a bearing support



Being able to improvise is a key skill for a turf technician to possess. One of the all time classics is the simple glass fuse wrapped in foil

# Modify, manufacture or improvise

In the last edition of ATM we launched our new dedicated turf technicians section with Royal Melbourne's Luke Spartalis looking at the changing nature of a mechanic's role. Continuing on from that, Greg Stringer from Heritage Golf and Country Club looks at three areas where turf technicians truly earn their keep.

down the roller supports causing damage to the grease nipples. The simple modification in this case was to beef up and extend the supports which eliminated the problem.

#### MANUFACTURE

Turf industry machines are still very unique (i.e.: made for individual purposes) and as such you cannot just buy any so called 'after market' parts or options to bolt on or use for a particular purpose.

I don't think that there would be one turf technician that hasn't schemed up an idea either out of necessity or under instructions from a superintendent to manufacture an item, be it small and simple to large and complicated.

One great example of this that I came across was a purpose built cylinder mower. This mower had been designed and manufactured to be used on a miniature village display where a normal mower would be too wide to use.

What made it unique was that the cut was only about 25cm wide. The machine used a brush cutter engine that drove, via belts, a twin-bladed cylinder which in turn cut against a modified wood chipper blade for a bedknife. It came complete with a fixed rear roller, adjustable front roller and bedknife along with a grass deflector so as not to scatter the clippings.

#### IMPROVISE

For whatever the reason, be it budget constraints, lack of new parts or just to get an



This purpose built 25cm cylinder mower was designed to be used on a miniature village display



Modified roller supports on this fairway unit helped eliminate the problem of damaged grease nipples

item working with as little down time as possible, it seems that almost everyone has at one stage or another improvised on a part or piece of equipment to achieve a positive outcome.

Improvising is a means of making do or getting by with the basic items at hand, be it just a very quick fix to get you going or maybe a full-blown repair job.

One of the all time classics is the simple glass fuse wrapped in a cigarette packet foil. I thought they only did this in the movies until I was fault finding an electrical circuit and came across a fuse holder hiding a fuse that I guess was now rated at about 100amps.

There was another case where I pulled apart a castor wheel from a rough cutter deck only to find a section of electrical conduit had been used as the bearing support. Surprisingly this had lasted quite a while and it was only the bearing that had collapsed and not the conduit. This is what improvisation is all about.

In an ideal situation you would have all spare parts in stock with everything being over-engineered but apart from being too impractical it would also be far too costly.

Just remember that old adage that one man's trash is another man's treasure. It could

be that the box of so-called trash lying around, whether it be old parts, steel or whatever, could be the saving grace for your predicament.

Your turf technician may just be able to modify, manufacture or improvise using these items to get your equipment up and running again to save the day.

I guarantee that if you stand in your work shed and have a look around at your equipment you will be surprised to see how many items have either been modified, manufactured or improvised.

#### TETA STATE CONTACTS

Membership enquiries Sam Olah M: 0418 296 111 E: s-m-s@bigpond.com Next event: 12 Feb 2008, Sponsor Toro Australia VTETA Membership enquiries John Phelan E: john@vteta.info Next event: 19 Feb 2008 (TBC)

# <section-header><section-header><section-header><text><text><text><list-item><list-item>

- Environmental Initiative Discount
- The Cut email newsletter
- Permission to use AGCSA logo on your material.
- Discount of AGCSATech services
- Discount to Conference (education)

To join contact Pip Dudley on (03) 9548 8600 or info@agcsa.com.au

# 🙆 GCSAWA



ith 2007 nearly over it's time to reflect on a busy year, prepare for Christmas and plan for 2008.

The recent loss of Joondalup superintendent Jeff Lane to Cairn's Paradise Palms Country Club leaves our association without a treasurer. Craig New and I will share the role until next year's AGM where there will be a vacant committee position available.

Jeff has been involved with the GCSAWA for as long as I can remember, being the treasurer for over five years and also a past president. We all wish him the best for the future and hope the family settles in well in the tropical north.

Congratulations must go to Peter Fleming on winning the Golf Masters Cup for 2007 from Brad Anderson. The golf events will be slightly reduced next year with results incorporated into other yearly events.

The GCSAWA is planning a busy 2008 with the bi-annual conference set down for May at Rottnest Island. Craig New is organising and gathering options for what should be a great couple of days.

We will be endeavouring to attract a couple of very special guests as well as a few local superintendents showing us what they have been doing over the last two years. The team building events will be also be very different due to the location. Registration and further details will be sent out in the new year.

The departure of many long-serving golf course personnel from the industry, such as

# GCSAQ

ne of Queensland's longest serving golf course superintendents has called it a day. Ian Earp, a well known name within the golfing industry in the Sunshine State has retired after serving as superintendent for 32 years at Oxley Golf Club.

All up Ian has been in the industry around 48 years, starting his career at Royal Queensland Golf Club. Ian spent some time on the GCSAQ committee in his earlier days when meetings were held at the Bellview Hotel in the city. We wish Ian a happy retirement in Cardwell, fishing and Iawn bowling.

The GCSAQ turf research day held at Royal Pines was very successful with 130 in attendance. The day started with breakfast, then 18 holes of golf. Thank you to Paul Alan Morley from Secret Harbour, has created a few worries with people leaving the industry looking for greener pastures.

As most superintendents in this position will know, finding new staff can be an onerous task and there are many clubs running with staff numbers at 70 per cent. Apprentices in particular are very difficult to attract at the moment which is a real worry for the future of the industry.

Rainfall has been better in 2007 compared with 2006 easing the pressure on the industry, especially licensed bore owners with no restrictions on use as long as we stay within our allocation.

Spare a thought for our counterparts on the east coast with water restrictions so tight that some states have very little available irrigation water and households restricted to 14 litres per person per day including showers.

In closing I would congratulate all our members on a great 2007 and wish them all the best for 2008. I hope to catch up with as many members at our various association events coming up throughout the year. These events can only continue with your support and if I can be of assistance to anyone in any shape or form during my tenure as president please do not hesitate to contact me at gcsawa@ aapt.net.au.

#### DARREN WILSON PRESIDENT. GCSAWA

McLean and his team for the presentation of the golf course.

This was followed by lunch and a few words from our major sponsor of the day, Twin View Turf. Then the QDPI&F's head 'experimentalist' Jon Penberthy gave us a rundown on what was happening with the many trials being conducted at Redlands Research Station.

To finish the year off, the Christmas party at Wet 'n' Wild was another success with 150 in attendance. On behalf of the GCSAQ we hope everyone has a great Christmas and a happy New Year.

#### ROD COOK PRESIDENT, GCSAQ

hope everyone has had a quiet and peaceful Christmas and a well earned break. Since the last report from the TGCSA the board has been busy setting up the programme for 2008.

Our last meeting for 2007 was held in Hobart on 27 November with the main topic on irrigation and recycled water. The Clarence City Council has extended its reach and is now the largest recycled scheme in Tasmania, which has enormous benefits for five golf clubs on the eastern shore currently using the water.

During the day we viewed the new Toro irrigation system at Royal Hobart Golf Club and its operations, as well as the new storage dam at Tasmania Golf Club. Peter Rand from ARM gave a very informative presentation on the recycled scheme, its background, OH&S items, water quality and management.

The next TGCSA meeting will be in Launceston on 27 February 2008. More information will be sent out early in the new year.

On the weather front, September and October were two extremely windy months drying everything out very quickly after a dry winter. Some rainfall figures for the 11 months from around the state are: Hobart Airport (356.2mm), Launceston (509.6mm), Devonport (493.2mm), Smithton (747.8mm) and Swansea, on the east coast, (338.8mm). Compare that to Mt Read on Tassie's west coast which has had (3014.8mm).

Some sad news came our way in October with Stu Matthewson's resignation from Devonport Golf Club. Stu has moved into the retail side of the industry and we wish him all the best and thank him for his efforts as TGCSA secretary.



Dan Gilligan (pictured) has keenly stepped into the role until the next AGM, while Kane McDonald from Port Sorrell Golf Club has taken on the role as superintendent at Devonport.

Further east, and progress is steadily taking place for the planning of the second 18 holes at Barnbougle Dunes. Superintendent Phil Hill has informed me that everything is on schedule, plans have been submitted to council and earthworks are due to start in mid-2008. Stay tuned!

#### STEVE LEWIS PRESIDENT, TGCSA

# TGAA ACT 🕸

First, I would like to take the time to congratulate all those local and interstate apprentices who have completed the last year of their tech studies. Although many of you may still have another year of on-the-job training to complete it must be a good feeling to know that you have finished the theory side of your training.

For those who are now fully qualified, the TGAA ACT wishes you all the best for the future and hopes to see you continue working within the turf industry. Although you may have finished studies for your trade certificate it is in your best interest that you continue with your training and the local Canberra Institute of Technology, Horticultural Department, is constantly looking for enrolments into the diploma level of training. For more information please contact Bruce Davies on (02) 6207 4623.

Locally the region has received some significant rainfall during November which has topped up many dams and impoundments and helped to alleviate many problems associated with the drought. Although recent rain has helped to reduce total water usage, local turf managers are facing the real threat of tight water restrictions. If these restrictions are imposed it will result in the significant loss of assets for many clubs and businesses throughout the district.

The local water authorities/regulators and representatives from both the horticultural and turf industries are in constant discussion on exactly what impact this may have. It is vital that industry assists in developing strategies to combat the issue of the reduction in water allocation.

In local news, a district golf club which is in the final stages of a five-year maintenance contract with a large outsourcing firm has decided not to continue with the option of contract maintenance and has decided to go back to the 'in-house' option.

This is a big step for the Canberra-based club with a number of reasons behind the decision, the main one being so as to maintain better control of the day-to-day maintenance of the golf course and its facilities. Initially things will be difficult for the club, although this is the beginning of the building of the foundations for success. All current staff are being retained which is good news for all concerned.

On a final note, Smartrain is holding a series of chemical user and handler courses that run for two days and are fully certified. The course itself is AQF Level 4 accredited. Due to the constant changes made to legislation affecting chemical users, it is essential for staff who are involved in the supervision and training of workers to practice the correct methods in transport, handling, mixing and applying chemicals in the workplace. For further details please contact Chris Houghton on (02) 6284 4533.

The TGAA wishes all members and their families a safe and festive holiday season and a prosperous 2008.

#### JUSTIN A.K. HASLAM Committee, tgaa act







A s I write this report New South Wales is receiving some much needed rain. At my club we have had 550mm rainfall over the past five months. Let's hope we get some dry weather too for a little while – then rainfall from 23 December until five (it's nice to dream a little!). Despite that dam levels are again on the decline and NSW can expect another tough summer.

I recently attended the NSW Turf Technicians Association's (NSWTETA) annual general meeting at Stadium Australia in Sydney. I was invited along with AGCSA joint general manager Scott Petersen.

The turf technicians are concerned about the lack of apprentices coming through the industry and also losing good technicians to other industries. The NSWGCSA is fully aware of the current shortages of turf technicians and would like to help in any way possible.

We are looking to meet some career officers to ensure they are aware of the role and what it has to offer. I would encourage any superintendent to join up their turf technician to the NSWTETA. You can contact president Nathan Healy on 0416 317 056 or Sam Olah 0418 296 111.

#### AGM

The NSWGCSA annual general meeting was held at Cabramatta Golf Club in August, and I would like to thank all 61 delegates who attended. A big thanks to Toro for sponsoring the day yet again. To Craig Wright, host superintendent, and Cabramatta Golf Club, thank you for allowing us to use your great facility.

Scott Riley is no longer on the board after four years of service. Scott has been in charge of field days for the past four years and his commitment to the industry has been outstanding.

I would like to thank Scott for all of his help and dedication and wish him all the best in his future endeavours. In turn, I would like to welcome Stuart Hall from Asquith Golf Club who has come on to the board; I'm sure he will be a great asset.

Comments and topics that arose from the AGM included:

- Concern about the lack of available apprentices and turf technicians;
- Promoting the NSWTETA within our industry;
- Improving the NSWGCSA website;
- More feedback required to improve the association's education days;
- Possibilities of a state phone book for superintendents.

With regards to the speakers, John Odell gave a short talk on the AGCSA and why he decided to return to the ring, while John Neylan finished off the meeting with a presentation on AGCSATech projects as well as a brief report on the AGCSA. Thanks to both for their valuable input on the day.

#### **EDUCATION DAY**

The annual Education Day was held at Roseville Golf Club on 30 October and focused on the highly topical issue of water. The day was sponsored by Nuturf and Rainbird. I would like to thank Roseville superintendent Mark O'Sullivan for allowing us to use the fantastic conference facilities.

It was decided earlier in the year that we give more air time to our sponsors in a way to thank them for their ongoing support. Consequently, we asked Nuturf and Rainbird to present on their own products, which have had a positive impact in regards to water management.

The AGCSA shared the day with an abridged version of Daryl Sellar's presentation on human resource management and an update on the salary survey recently conducted. As always, Daryl had everybody's undivided attention and presented a great session. Thanks again to Daryl and the AGCSA in continuing to improve the standards for our industry - and if you haven't completed the wages survey, please do.

# NSWGCSA

#### The 2007 NSWGCSA AGM was held at Cabramatta Golf Club

#### MEMBERSHIP

Membership numbers are going well and we have received 283 renewals. Craig Wright will be chasing up those who haven't renewed.

The new apparel range is also now available. New shirts and sleeveless jackets have been purchased and will be shown off at our field days. Anyone wishing to purchase these items can contact Mark O'Sullivan directly via email mark@rosevillegolf.com.au

#### TOURNAMENTS

The latter part of 2008 saw a number of NSW clubs host major tournaments. Congratulations to Mark Parker and all of his staff for the recent tournament success at Concord Golf Club which hosted the Men's and Ladies Senior Australian Open. The tournament was a great success, the course looked fantastic and was understandably very well received by all players.

Well done also to Steve Harris and all staff at the Vintage Golf Club in the Hunter Valley which hosted the NSW Open. I'm sure we will score better than the pros when we grace your fairways in June for the annual Ambrose event!

And finally, congratulations to David Honeysett and his crew for the wonderful presentation of The Australian Golf Club at the Australian Open in mid December.

#### CALENDAR OF UPCOMING EVENTS

Please ensure you diary the following meetings for 2008.

**Directors meeting** – Shortland Shortland Waters Golf Club (25 February);

Rube Walkerden Day – Killara Golf Club (10 April);

Directors meeting – Asquith Golf Club (19 May);

Annual Ambrose Event – The Vintage Golf Club (16 June);

**Directors meeting** – St Michaels Golf Club (4 August);

2008 AGM - date TBA.

Wishing everyone a great Christmas and a wet New Year!

ANDY HUGILL PRESIDENT, NSWGCSA

# NZGCSA 🟵

n behalf of all NZGCSA members we hope you have all had a prosperous and safe festive season and the new year is treating you and your courses well. With the start of another year we always seem to be reflecting on were the last one went and how fast they seem to go.

As with all associations leading up to Christmas, most of our regional associations wind down their field day activity and focus more on the social side. I was fortunate to once again attend the annual Central Turf Managers Association annual Christmas golf tournament weekend held in Whitianga on the Coromandel Peninsula.

The organisation and enthusiasm of this association in not only putting on this weekend but all of their days is a credit to all involved. The involvement of not only their present members but all who attended typify what this industry is about.

Prior to Christmas, as a guest of NZ Golf, I was invited to attend the New Zealand Golf Open in Queenstown at The Hills Golf Club.



This stunning property and golf club is privately owned and has secured the rights to the event which is now co-sanctioned with the Australian PGA and European Tour for three years.

If you managed to see the coverage of this event you would have seen the absolutely stunning facility that has evolved coupled with the surrounding landscape. It is hard to believe but it was the first time the NZ Open had been in the South Island for 22 years and the first time ever in Queenstown.

The building of not only this course but other projects, along with the quality of all the existing golf clubs, means this region is fast becoming a golfing mecca. While Queenstown is regarded internationally as a ski retreat, pretty soon I believe it will rate even higher as

#### The Hills Golf Club recently hosted the 2007 New Zealand Open

#### a golfing destination.

MAIN

In other association news, it was with regret that at the start of December the NZGCSA board received the resignation of our executive officer Peter Macintosh. Peter, along with his wife Carol, has been in charge of the day-today running of our association's affairs.

While this is a part-time role, the effort and enthusiasm that they applied to the position more often than not stretched past the allocated hours available and their commitment will be sorely missed.

We wish them all the best with their new ventures. Peter will finish at the end of February, by which time the NZGCSA hopes to have a new person involved to ensure a smooth change over and minimal disruption to our members.

#### PETER BOYD PRESIDENT, NZGCSA

#### **ON SALE NOW**

Call or email now for a copy of the trade exhibition brochure.

For more information or to book your position contact Scott Petersen or Melissa Wallace on 03 9548 8600 or melissa@agcsa.com.au or scott@agcsa.com.au.

Exclusive sales window for 2007 trade exhibitors until Wednesday 21<sup>st</sup> November then open to whole industry to book your space at the Southern Hemisphere's largest turf trade exhibition.





24th Australian Turfgrass Conference and Trade Show Melbourne Conference Centre - 23-24 July 2008

# VGCSA 👁

Merry Christmas and a happy New Year to all in the turf industry. To all our trade sponsors, the VGCSA wishes to thank you for your ongoing support in 2007 and looks forward to your continuing involvement in our great association throughout 2008.

The 2008 VGCSA Calendar was delivered in December, so if any members have not yet received a copy please get in contact with one of the committee members.

At this stage the following 2008 meeting dates have been locked in:

Education Meeting (disease ID, fungicide combinations, water projects/water qualities) – NMIT (26 February)

Country Meeting – Port Fairy Golf Club (6-7 April)

Annual General Meeting – Royal Melbourne Golf Club (26 May)

Education Meeting (soil and tissue testing) – Eynesbury Golf Club (25 August)

Annual Open Golf Day – Woodlands Golf Club (17 October)

Christmas Meeting - Rosanna Golf Club (1 December)

Thanks to all the clubs who will host VGCSA meetings in 2008. Without your support we can't offer our members education, golf days and the chance to share information with their fellow superintendents. I hope that all our members support these meetings.

With 3A water restrictions in place, low rains in September/October combined with some major falls all over Victoria in November, the skills of superintendents have been put to the test in recent times. With some clubs still having to truck water onto their golf courses,



Michael Picken (Riversdale Golf Club) and Alan Phillips were the recipients of the 2007 VGCSA Recognition Award for their services to the VGCSA

costing as much as \$16000 per megalitre, let's hope summer can bring some good rainfalls to ease the financial strain on Victorian golf clubs.

The 2007 VGCSA calendar concluded with the Christmas function held at Huntingdale Golf Club on 8 December. It was a fantastic night with around 120 attending and included the presentation of the 2007 VGCSA Recognition Awards which went to Michael Picken and Alan Phillips.

Michael is a 26-year veteran of the turf industry and has been superintendent at Riversdale Golf Club for the past 12 years. Prior to that, he spent 12 years at Cape Schanck, including eight years as superintendent. Michael also spent a decade on the VGCSA committee and served three years as president.

Alan also falls into the veteran category and earlier in 2007 retired after 24 years in the turf industry. Alan spent five years with Deveson-Jahn before moving to Toro where he spent 19 years servicing the needs of Victorian superintendents.

Both Michael and Alan have made massive contributions to the VGCSA over the years and this was just a small way the association could recognise their efforts in an industry which they are very passionate about.

#### MICHAEL FREEMAN PRESIDENT, VGCSA

🕸 TGAA VIC

he TGAA VIC held its summer seminar last month with water as the theme for the day. Storage, efficient use and weather patterns were all discussed and someone must have done a rain dance as it rained all day. While the wet stuff was great to see, much more is needed in the catchment areas, although we have had good supplementary rain compared to the last five years and hopefully it will continue over the summer.

Dave Morrison from the Bureau of Meteorology gave a very informative talk on comparisons of the current drought conditions with past trends and what we can expect in the near future. Peter Fitzgerald gave a talk on catch-can tests and how to relate these figures on the efficiency of your irrigation system.

Stephen West and Daniel Schwartze from Haileybury College talked of how they coped with the problems caused by drought and what changes they have made to get through this summer. We had a number of other very interesting talks on the day and some of the speakers' notes are on the TGAA website (www.tgaa.asn.au) for your convenience.

Coming activities include a field day in March 2008 (details to be posted on TGAA website soon) and the Cricket Wicket Seminar in conjunction with the 24th Australian Turfgrass Conference at the Melbourne Exhibition and Conference Centre next July.

The new Victorian committee is on track to move forward with TGAA business and invites feedback and suggestions for educational events to be arranged in the future. Please email your suggestions to admin@tgaa.sn.au. Our newsletter is to be emailed in December, so if you have not supplied your email address, then please do so as soon as possible.

The Committee wishes you all a very merry Christmas and a prosperous new year.

#### ROB SUNDBLOM PRESIDENT, TGAA VIC



For more information, contact Scotts Australia Freecall 1800 789 338 www.scottsaustralia.com New Zealand (09) 299 6558 www.scottsnz.com To find your nearest local Distributor, go to the Scotts website. Professional Business Group, Scotts Australia Pty Ltd 11 Columbia Way, Baulkham Hills, NSW 2153 Phone (02) 8853 7300 Fax: (02) 8853 7310 ©Scotts Australia Pty Ltd 2007 ®Registered Trademark

## BUILDING WATER EFFICIENCY INTO YOUR GREENS

New Sierraform<sup>®</sup> GT is an improved, unique formulation combining slow release potassium and nitrogen, for:

- increased efficiency of turf water consumption
- maintaining a higher bank of "available K"
- optimum protection against stress
- enhanced cold, heat, drought and wear tolerance
- minimised disease activity
- accelerated disease recovery
- proven minimal mower pick-up

Sierraform GT

# (CLOWARA



"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)



#### 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?



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



#### Christchurch

hone (03) 365 0279	Fax (03) 366 6616
Auckland Phone (00) 525 8282	$F_{2X}(00) 525 8284$
<b>Nelbourne</b>	147 (09) 525 0204
Phone (03) 9793 9999	Fax (03) 9793 0022
<b>Syaney</b> Phone (02) 9624 2577	Fax (02) 9624 2561
Brisbane	100 ( ( 0 2 ) ) 0 2 1 2 3 0 1
Phone (07) 3200 6488	Fax (07) 3200 3822
Weh Site www.brownbros.com.a	iu im all