

SPORTS TURF MANAGER

... for better, safer Sports Turf

DECEMBER 2000

VOLUME 13 ♦ ISSUE 4

Soccer Stalemate

PAUL S. HENDREN AND COLIN JOSE EXAMINE THE STADIUM IRONY THAT PLAGUES CANADA

Huddled inside a downtown Toronto office, in the shadows of City Hall, crack teams of architects and designers have worked relentlessly to create one of the world's most progressive state-of-the-art soccer grounds. Several blocks away, also situated in Toronto's city centre, lies a symbol of the irony that has beset soccer in the land of beavers and canoes. Varsity Stadium, Canadian soccer's home for the better part of the 20th century, sits in its own cobwebs narrowly avoiding the wrecking ball year after year.

Varsity's condemned East Grandstand, outdated cinder track, splintered benches and deteriorating concrete structure continues to house big league soccer while at the same time one of Canada's leading architectural firms are exporting their expertise abroad. From right under Canadian soccer's noses Brisbin Brook Beynon Architects, in conjunction with Stadium Consultants International, have been recruited by Turkish soccer giants Galatasaray S.K. who are embarking on a progressive scheme to redesign Ali Sami Yen Stadium in Istanbul. A project that will convert the existing inner city concrete bowl into a 40,000 seat grand theatre



"To a real fan it is hardly necessary to explain the allure of the football ground, or indeed the central role it plays within the game. Football is not like theatre or cinema, where all eyes are focused upon the screen and all else is in darkness. A football ground – its floodlights, its crowds, its noise, even its smell – is as much a part of the event as the game itself." Simon Inglis, author of *The Football Grounds of Europe*.

of sport offering soccer patrons the ultimate stadium experience in style and comfort. There will be 100 private suites, over 12,000-reserved weather protected seats, VIP lounges, restaurants, food courts, a sophisticated three level internal shopping mall and an attached office tower. BBB Architects and SCI have established notoriety in Canadian sports

circles with their work in the Air Canada Centre, General Motors Place and the Skydome, not to mention their numerous international projects.

A Storied Past

Canadian soccer has a storied past with its beginnings dating back to the early nineteenth century when soldiers of the British garrison situated on the Eastern seaboard took on visiting men-of-war or seamen from merchant or fishing vessels. Professional soccer also took root several decades ago with several Canadian teams participating in the famous North American Soccer League that included legends Pele, Franz Beckenbauer, Johan Cruyff and George Best, to name just a few. Even such celebrated global superstars as Sir Stanley Matthews, Eusebio, Peter Beardsley, Graeme

Souness and Roberto Bettega made a living playing soccer on Canadian soil.

In the 1920s and '30s Toronto was rich with soccer homes. Ulster Stadium, a facility designed specifically for soccer, frequently attracted crowds well into five digits and at one time, it was considered the best soccer stadium in North America. Famous England *continued on page 7*

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Joint ORFA/STA Seminar a Success

On Wednesday, October 11, 2000 a joint educational workshop was held at the East Gwillimbury Sports Complex. The event represented yet another step in a proposed partnership between the Sports Turf Association and the Ontario Recreation Facilities Association.

Terry Piche chaired the event and introduced new ORFA President John Archibald and Executive Director John Milton to participants. Both spoke about the pending partnership and mentioned the benefits and their thoughts for the future as being extremely helpful to both parties.

The day went well with considerable information both imparted and exchanged between speakers and the audience. Four main topics were discussed. During the morning session, Michael Bladon covered "Risk Management" and Jane Arnett-Rivers and Dwayne McAllister spoke on "Maintenance of Athletic Fields and Putting Them to Bed for the Winter." There was a lively exchange of ideas during the latter workshop.

There were two excellent sessions in the afternoon, the first by Gordon Dol of Dol Turf Restoration Ltd. who dealt with "Sports Field Drainage, Irrigation and General Construction." The final speaker



STA President Jane Arnett-Rivers talks to workshop participants about maintaining athletic fields and preparing them for winter.

of the day was Pam Charbonneau, OMAFRA Turfgrass Specialist, who gave a very professional talk covering all the "Basics of Sports Turf Management."

Several exhibitors had booths displaying their wares. Olympia, who manufactures the ice making equivalent of the Zamboni, donated several gifts to be included in a draw conducted by Terry Piche at the end of the afternoon.

The workshop attracted approximately 45 people for the day, some from as far away as Nepean, Ontario. Altogether a worthwhile event for all concerned and a great start for future information sharing between these two associations. ♦

— Michael Bladon



Ontario Turfgrass Symposium

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When registering for the OTS, be sure to indicate you are a member of the Sports Turf Association, a sponsoring association of the symposium. On your registration form please Sports Turf Association to ensure your membership credit is directed to us!

Save more money on the registration fees of others from your facility/organization who are not members of the STA. Non-members registered **at the same time** as a member qualify for the same lower association rates. Send the registration in the same envelope, fax it at the same time, or make just one phone call to register.

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STA OFFICE HOURS

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Turf News Briefs

INTERESTING GRASS CLIPS • CONGRATULATIONS



Splendour in the Grass

Atlanta's Garden House Dance Company is giving free performances of *Mowing* in the city's parks, reports The Journal-Constitution. "Four dancers will partner with non-motorized push-mowers in a seductive paean to the summer ritual of lawn care. The dancers will waltz with their lightweight mowers, lift them, even play them as instruments, all the while carving continually changing patterns into a 38-by-38 foot expanse of grass. By the time it's over, the grass is cut."



— *The Globe & Mail, September 13, 2000*

Frankengrass

Recent notes about genetically altered grass include:

- Grasses that have different colours or contain a luminescent gene that would make them glow in the dark are being studied by Monsanto, Scotts Co. and the Biotechnology Centre of Rutgers University.

- In its Ohio research laboratories, Scotts, the world's largest maker of lawn and turf products, is field-testing varieties of "low-mow" lawn grass that will grow more slowly. Other strains could be bred

to have improved drought resistance or to flourish in the winter. Scotts is also working on a genetically modified grass that can withstand the most potent weed-killers to remain healthy and green.

— *The Globe & Mail, Social Studies, Michael Kesterton, August 30, 2000*

Editor's Note: For more information on GMOs in Turf, be sure to attend Dr. Steve Bowley's seminar on January 4, 2001 at the Ontario Turfgrass Symposium.

OPA/ORFA Update

Our congratulations to STA member John Howard on his appointment as Executive Director of the Ontario Parks Association. John adds another dimension to a very strong career with parks and horticultural services both in the public and private sector.

Congratulations are also in order for Terry Piche who steps down as President of the Ontario Recreation Facilities Association to assume the position of Technical Director. John Archibald will carry out the role of acting President. Best wishes to all!

DEADLINE: JANUARY 14
Content for March issue

STA New Members

Welcome to the STA

Steve Halbert
Operations Supervisor
Dol Turf Restoration Ltd.
Thornhill, ON

John R. King
Partner and Contracts Manager
Strybos Associates Ltd
Landscape Architects
Mississauga, ON

David C. Smith
Turfgrass Consultant
DCS Agronomic Services
Gravenhurst, ON

Gary Supp
Contractor Products Manager
Turf Care Products Canada Ltd.
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The President's Desk

JANE ARNETT-RIVERS

Depending on the work you have been carrying out this fall, the weather has been spectacular. We have been installing tile drain on one of our Little League diamonds and the sunshine and absence of rain seem to have been custom ordered. Now that the trenching, back filling and sodding are complete, precipitation can begin!

Hope your fall renovations are moving along smoothly – surely the prolonged higher temperatures have helped extend timelines of work that needs completion prior to frost. We will be using 'turf tarps' again this year on some of our goal mouths and centre field areas to extend the seeding season. I'm writing this column in mid-November and we are still waiting for cooler temperatures to arrive to use them. Turf tarps worked very well for us last year, both in the fall prolonging our seeding window and in the spring accelerating germination. If you have any questions about turf tarps, please contact us.

Your Association, in cooperation with the Ontario Recreation Facilities Association, organized a workshop in East Gwillimbury in October. Many thanks to Terry Piche for facilitating a very informative day. Mike Bladon, Dwayne McAllister, Gord Dol, Pam Charbonneau and myself covered a wide range of topics: safety and liability, what's new in maintenance, soils, pesticides, irrigation and drainage. The day was a success and we received a great deal of positive feedback. We trust this will be the first of such workshops to take place outside the Greater Toronto Area. If you have any questions about this or future workshops, please contact Lee Huether at (519) 763 9431, sta@gti.uoguelph.ca or Terry Piche at (705) 864-1215, tpiche@onlink.net. The Sports Turf Association is looking forward to more partnerships with ORFA.

Another milestone for our Association – Dr. Bob Sheard's book will soon be available. I am fortunate to have read parts of *Understanding Turf Management* and can say this is a valuable and comprehensive text. It is instrumental as a reference on countless topics and will have a permanent spot on my desk. Much gratitude goes out to the sponsors of *Understanding Turf Management*, Bannerman, G.C. Duke Equipment Ltd. and Textron Golf, Turf and Specialty Products, NuGro Corporation and Rain Bird International, Inc. Their support will allow the cost to remain accessible to all, something Dr. Sheard was adamant about. Congratulations and thank you on this accomplishment, Bob. Your hard work will assist us in making informed decisions about our playing surfaces over the coming years. To purchase the book, contact Lee at the Sports Turf Association office.

My thanks to our Past President Chris Mark for his ongoing efforts in responding to Bill C-388. A complete report will be submitted by Chris on behalf of the Association. Chris continues to represent the STA with accurate and highly knowledgeable information. Thank you for your continued dedication to professionalism in this industry.

It's OTS time again. If you have not received your registration brochure, contact the University of Guelph's Office of Open Learning at (519) 767-5000, www.open.uoguelph.ca/ots. Remember to tick the STA box when registering – this is vital both for fiscal and statistical reasons. This brings me to the Municipal Challenge. Two teams are still needed to step up to the plate and vie for the trophy in Jeopardy. Last year was a fast paced, full of laughs session. Gather your team, cover your knowledge base with equipment, turf, pesticides, soil, irrigation and drainage, and let either Lee or myself (phone

(905) 847-9181) know your hat is in the ring. No stress, just fun.

As STA members, you are cordially invited to join our Annual General Meeting and luncheon during the OTS. The invitation is included with this issue of *Sports Turf Manager*. This is an excellent opportunity to meet the Board, hear what is happening in the Association, and attend nominations. I sincerely hope you will attend on Wednesday, January 3rd beginning at 10:30 a.m. Please join us.

Lastly, I have spent the better part of this message thanking associates. This is the last edition of the *Sports Turf Manager* for the year, so I will close by thanking all members of the Association and the Board. Much has been accomplished this year. I cannot imagine any of the tasks coming to fruition without the support of members, suppliers and most importantly the dedicated group of people on the Board, including Lee Huether our Executive Manager. How many times have I deferred to Lee in this message for information? Congratulations to all who contribute and keep this Association what it is. It is an honour to be a part of such a professional, dedicated and productive group. Wishing you all the best in the year to come. ♦

Seasons Greetings

from the staff
and board of
the STA



Have a safe and happy holiday
and enjoy the New Year!
We hope to see you January
3-5 at the Ontario Turfgrass
Symposium in Toronto!

Laboratory Diagnosis of Turfgrass Diseases

MARILYN DYKSTRA, LABORATORY SERVICES DIVISION, UNIVERSITY OF GUELPH

Turf grasses are attacked by a number of diseases and pests which can cause rapid deterioration in the health, appearance and uniformity of turf. To minimize problems caused by diseases and pests, it is important to have the problem diagnosed as quickly as possible.

Diagnosing turf problems is not always an easy task. Most infectious turf diseases are caused by fungi which, unlike insect or weed problems, are microscopic and not visible to the naked eye. As a result we must base our diagnosis on symptoms – the response of the turf to the disease-causing agent. To further complicate matters, symptoms caused by a particular pathogen may resemble those caused by other diseases or environmental stresses and will vary depending on the type of grass, cultural practices and environmental conditions. In these situations, a laboratory diagnosis can prove useful to the turf manager.

In the laboratory, trained diagnosticians are able to examine turf samples microscopically and use other laboratory tests to detect and identify or rule out pathogens. Based on microscopic features of the fungi, they are able to distinguish between those diseases which produce similar symptoms.

Laboratory diagnosis of turf grass problems is available through the Laboratory Services Division at the University of Guelph. Diagnoses are based on microscopic examination of the sample with follow-up culturing if required. The fees for diagnosis are \$50 and a 24-hour turna-

round time for a preliminary diagnosis is guaranteed.

Given that laboratory staff do not have the opportunity to view the problem in the field, it is critical that samples submitted be representative of the problem and that they be received in as fresh a condition as possible, accompanied by complete background information. Following are important considerations when submitting samples for disease diagnosis;

How to Sample

1. A 10-15 cm square of turf is required. The sample should include the foliage, thatch and roots of the grass. A collection of small (loonie) size pieces of grass is not suitable.

2. Sample from areas which have recently developed symptoms. Diseased and dead grass can very quickly be overgrown by secondary fungi, which mask the primary pathogen and symptoms.

3. If symptoms are general, sample from areas with intermediate symptoms; little can be determined from grass which is completely dead.

4. If patches of grass are affected, sample from the edge of a recently developed patch and include healthy, newly affected and severely affected grass.

5. For rings or "frog-eye" symptoms, sample across the ring and include healthy, newly affected and severely infected grass.

6. Sample BEFORE you treat with fun-



gicide. Fungicides destroy physical evidence of the pathogen and inhibit its growth, making pathogen detection very difficult.

7. Include as much background information as possible with the sample. Include distribution and severity of symptoms, when the problem first developed, weather conditions, etc. Be sure to include your complete address and telephone and fax numbers. Submission forms are available from Laboratory Services Division, but information sent in letter form is also acceptable.

8. Wrap samples in newspaper and then in plastic and place in a sturdy box. Never add water as this will encourage deterioration in transit. Deliver the sample to the laboratory in person or send it by courier to: Turfgrass Diagnostic Service, Laboratory Services Division, 95 Stone Rd. West, Guelph, ON N1H 8J7. Tel: (519) 767-6258. Fax: (519) 767-6240. Email: mdykstra@lsd.uoguelph.ca. ♦

Marilyn Dykstra is a diagnostic plant pathologist and specializes in turf grass disease diagnostics at the Laboratory Services Division, University of Guelph. For information on diagnostic services for other plant problems, contact the Pest Diagnostic Clinic at (519) 767-6256 or visit the PDC website at www.uoguelph.ca/pdc.

Editor's note: This article is to clarify the misinformation published in Volume 13, Issue 3 of the *Sports Turf Manager*. We apologize and regret any inconvenience it may have caused.



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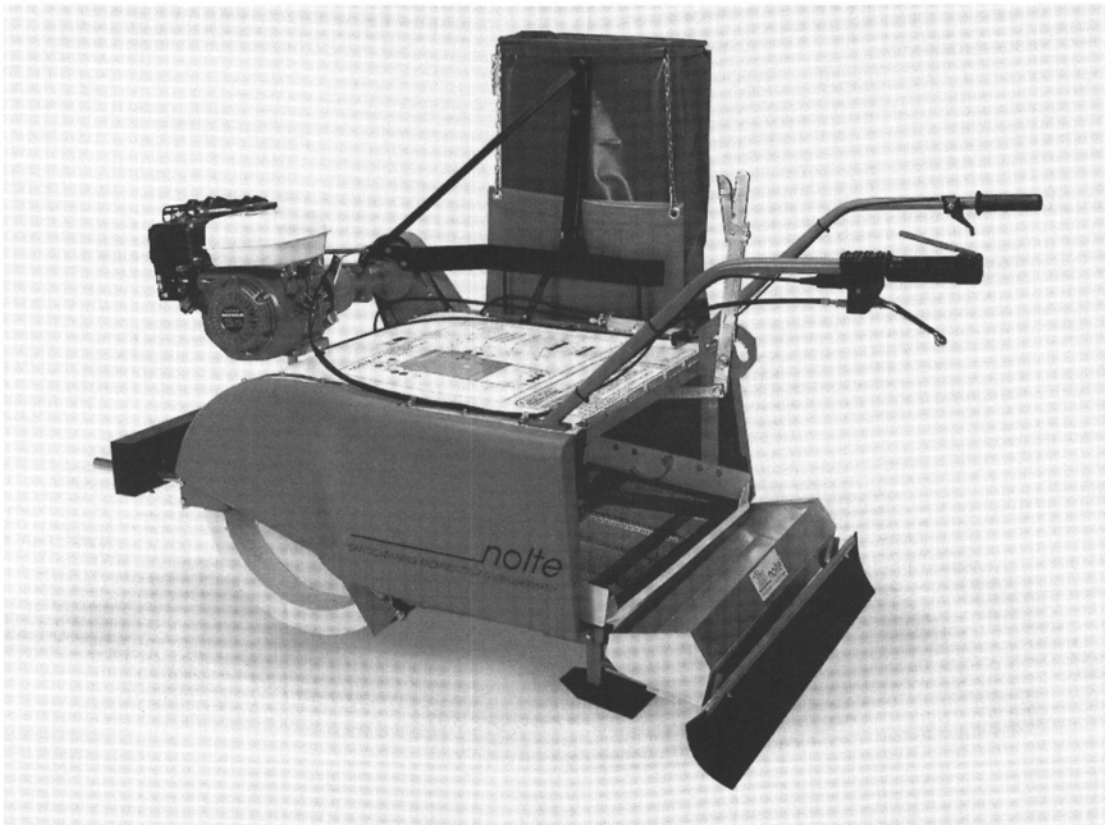
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Soccer Stalemate

PAUL S. HENDREN AND COLIN JOSE • CONTINUED FROM FRONT COVER



With more participants registered in soccer rather than Canada's passion, ice hockey, one would assume that soccer grounds, like the infinite number of hockey arenas, would be similarly scattered across Canada.

International David Jack played at Ulster Stadium in 1926 and when he returned home he told the Athletic News that the Toronto based soccer stadium had one of the best enclosures that he ever played on. Today, Ulster Stadium, like many other vintage parks, has been redeveloped for housing. Toronto's Maple Leaf Stadium, a baseball park, attracted 23,137 patrons in 1968 for a game between Inter-Milan and Olympiakos and during the same year, a few blocks away at Exhibition Stadium, Glasgow Celtic and AC Milan attracted over 30,000 for a friendly.

Varsity Stadium, known for years as the home to Canadian soccer hosted one of the most memorable matches in recent history. In 1972, Santos played Bologna with a capacity crowd bursting every inch of Varsity Stadium. Thousands of fans who were unable to gain entrance scaled the northern wall and lined the touchlines to get a glimpse of Pele in his famous white shirt. As recently as November 2000, Canada versus Mexico played to a 0-0 tie in front of 6,500 fans.

In 1981, Exhibition Stadium hosted the North American Soccer League's Soccer Bowl and 36,971 turned out to see Chicago upset the mighty New York Cosmos resulting in many revellers from the windy

city spilling out into Toronto's downtown core. In Vancouver, Empire Stadium, site of the famous Roger Bannister-John Landy sub-four-minute mile, quickly established itself as one of North America's premier soccer grounds attracting large boisterous audiences for Whitecaps games. Empire Stadium, like Callister Park in Winnipeg and Delormier Stadium in Montreal has since been reduced to rubble unable to avoid redevelopment.

Montreal's Olympic Stadium attracted 71,617 for the 1976 Olympic soccer final and the Montreal Manic frequently drew over 40,000 to the same venue during their banner season in the North American Soccer League in 1981. Many large stadia in Canada, however, have been ruined for soccer with the introduction of synthetic playing surfaces. A trend that appears to

have been reversed over the past decade south of the border.

Cold Reality

With more participants registered in soccer rather than Canada's passion, hockey, one would assume that soccer grounds, like the infinite number of hockey arenas, would similarly be scattered across Canada's expansive landscape from the Atlantic to the Pacific. Nothing can be further from the truth and the cold reality is that Canadian soccer is now faced with a stadium crisis. Canada's small fleet of soccer facilities are either too old, too decrepit, too small, too cavernous or just too inappropriate to house big soccer events.

On the West Coast, considered a hotbed for soccer due to its moderate climate, there is little doubt that ... *continued page 8*

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Swangard Stadium in Burnaby, British Columbia; situated overlooking the Rocky Mountains has an unmatched charm. During the hey days of the Canadian Soccer League it was the favourite destination for most players but even with its expanded capacity of 6,800 it is limited in size restricting its use for top international games.

Former national team coach, Bob Lenarduzzi, now one of Canada's top soccer broadcasters, is of the opinion that British Columbia will never again see big soccer events and he proclaimed that: "I think it is a disgrace that when you consider the size of Canada and we don't have one appropriate national soccer stadium."

Commonwealth Stadium in Edmonton was targeted to be Canadian soccer's saviour throughout the nineties and leading to the next millennium. A near capacity crowd jammed into the 60,000-seat facility to cheer on the mighty Brazilians before they embarked on their World Cup campaign in 1994. Commonwealth Stadium was the place to be and huge partisan Canadian crowds were expected when the men wearing the Maple Leaf touched down in Edmonton. The bubble quickly burst with extremely poor gates turned out for subsequent international friendlies and Olympic qualifying leaving Canadian national team head coach Holger Osieck with an empty feeling. Osieck, who assisted Franz Beckenbauer with the German national team in 1990, is not used to stadia with more empty seats than pay-

ing customers and he has been very critical of the Commonwealth as a venue for the national team.

In Manitoba, there was a glimmer of hope from the recently held Pan American Games. A small little intimate Soccer Park was erected outside of Winnipeg that was believed to lead to greater things. Unfortunately, the legacy of the Soccer Park lasted just a few weeks as the portable bleachers were quickly dismantled in Lego-like speed and shipped off to a distant auto race. The residuals that remain would only be suitable for a local amateur soccer team.

In La Belle Province, the Montreal Impact's (in North America's sanctioned second division) experiment of hosting both outdoor and indoor soccer at Center Claude Robillard has been impressive but the outdoor stadium's small capacity of 8,000, its intrusive running track and postage sized playing surface makes it less than ideal. Talk of converting the 20,000 seat Molson's Stadium in the city centre with a more soccer friendly playing surface and the Quebec Soccer Federation's scheme of erecting a large portable stadium on the grounds of the Olympic site using bleachers from the Montreal Grand Prix have never graduated from the drawing board.

Hogtown Headaches

The worst scenario comes from Canada's largest urban centre affectionately known to locals as Hogtown. Originally



The Canadian Soccer Association has officially applied to FIFA to stage the 2010 World Cup. They believe that Canada's army of CFL stadia can easily be retrofitted for the event regardless of the fact that all stadia will be committed to a full football schedule during summer months.

built in a charming period in the 1920s, Varsity Stadium's ideal capacity of just 20,000, its rectangular shape and intimate sight lines has served Canadian soccer well over the decades. Waiting for its date with the wrecking ball the East grandstand is now unfit for human habitation and the stadium capacity has been drastically reduced to a mere 9,000. After the grand old lady is converted to student housing for the University of Toronto next year what is left for soccer fans in Canada's most populated area are two municipal multi use stadia that are not even close to being suitable for big league soccer.

Toronto's top professional soccer club, the Toronto Lynx, has identified the pending problem and they are busy striking a working committee to examine stadium options. It appears that all stadium initiatives have been put on hold until the decision is made regarding Toronto's bid for the 2008 Olympics. Insiders believe that the spin-doctors at Toronto's Olympic bid have underestimated the magnitude of Olympic soccer and they have not made adequate provisions for new soccer stadia. A decision that concerns Kevan Pipe of the CSA who pleaded with the committee to spread the wealth by erecting or retrofitting stadia from coast to coast. The experiment of soccer indoors at the Skydome was never repeated and the fuzzy concrete playing surface has never been a favourite of international teams.



Capital Idea

Frank Clair Stadium, situated in the nation's capital, has been sitting in mothballs for several years uncertain of its fate. It appears that the stadium's destiny has been turned over to the regional government who recently assumed full control of its operation. Built in 1967, with a capacity of 30,000, Frank Clair Stadium's cantilevered roofs, doubledecker stand and rectangular shape shares many of the same characteristics of many football grounds across the United Kingdom. The stadium is fully equipped with a 150-seat press box and the first row of seats is as close as five metres to the touchlines.

With the Francophone Games scheduled for the national capital region in 2001 the stadium will undergo a significant facelift including installing a natural turf grass field. Initially there were serious discussions about installing Fieldturf, another Canadian innovation, but the Canadian Soccer Association has made it clear that a natural playing surface is their preference given FIFA's policy about playing surfaces. Kevan Pipe is a strong believer that Frank Clair Stadium has tremendous

potential to be a first rate soccer facility and a saviour for the national team program.

Coveting the Cup

Despite its obvious stadium shortcomings, the Canadian Soccer Association made the bold announcement in 1997 that it has officially applied to FIFA to stage the 2010 World Cup. CSA Chief Operating Officer Kevan Pipe is a strong believer that Canada's army of large grid-iron Canadian Football League stadia can be easily retrofitted for soccer's global spectacle. Pipe's scheme will include Ivor Wynne Stadium in Hamilton, Ottawa's Frank Clair Stadium, McMahon Stadium in Calgary, Taylor Field in Regina, Winnipeg Stadium, BC Place, Skydome in Toronto and Olympic Stadium in Montreal. All stadia with tremendous potential to house soccer but fully committed to their primary grid-iron football tenants throughout the summer months.

Located deep in the archives of the Canadian Soccer Association's headquarters sits detailed plans for a mid sized soccer specific stadium that were drawn

up in the early nineties. Occasionally Kevan Pipe pulls the plans out for a quick review wishing that his national federation had an infinite bank account to payroll such projects. It is a crime that Canada's national soccer body is unable to get into bed with the gifted architects who have been recruited from right under their noses to display their immense talents abroad.

Many pundits in the Canadian soccer community are painfully aware of the widening gap between our stadium wish list and our stadium reality. Indeed renowned author Simon Inglis' comments are apropos and without proper stadia, top-flight soccer in the Great White North will never engender passion or support. ♦

— *Panstadia International Quarterly Report*,
Volume 6, Number 3, January 2000

Paul S. Hendren, a member of the Professional Soccer Reporter's Association, is a feature writer with Canadian based *Inside Soccer Magazine*. Colin Jose, a regular contributor to *World Soccer Magazine*, has written several books including *Keeping Score: Canadian Encyclopaedia of Soccer and NASL - A Complete Record of the North American Soccer League*.

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Winter Priorities: A Course of Action

DEREK WALDER • TECHNICAL EDITOR • INSTITUTE OF GROUNDSMANSHIP PANEL OF SPECIALISTS



Question to the Expert: What should our priorities be during the winter months when there is not a lot to do on the ground? Can you advise on a course of action?

— D.E. of Essex

Answer

All machinery and equipment should be kept in a good state of readiness, so that if required it can be used immediately. Essential to achieving this is that all machinery and equipment is maintained at all times. During the winter months however, some machinery is used very little or not at all and this gives the time to carry out such duties that may have been difficult during the busy season.

Fertilizer Distributors

- Ensure that the hopper and all moving parts are thoroughly cleaned and where necessary oiled or lubricated. Ensure that no trace of fertilizers has been overlooked as this will cause rapid corrosion.

- Check the calibration of the distributor before spring.

- Any spare parts required should be ordered. If there is not a manufacturer's handbook, now is the time to contact the supplier and ask for one.

Grass Cutting Equipment

- If your grass cutting equipment requires an overhaul get in contact with your regular service company. Make a list yourself of what is required and give it to them. Always ask for an estimate before work commences so there are no 'shocks' when the machinery and the invoice come back.

- Check the machinery is in a reasonable state of repair, with attention being given to the cutting cylinders, bedknives and rotary knives, and belts and chains.

- If you have experienced any problems during the season with the engine then this should be corrected and your service company advised.

- If your machinery does not have to go away then ensure that all cylinders are loosened off the bedknife and oiled or sprayed with WD-40®. Disconnect the

spark plug from the engine and replace with a new one before next season.

- Check back on your requirements for spares during the last season and if the budget allows order basic spares such as drive belts or chains, spark plugs, cables and any nuts and bolts that proved to be troublesome. It is better to have a small stock of essential items ready at hand, this alleviates the 'down time' during the busy season.

- For storage purposes during the winter months try and store all machinery off the ground and on wooden slats or pallets.

Turf Cultivation Equipment

- Spiking machines which are used throughout the winter period when weather conditions are suitable should always be kept in working order. Worn or damaged tines should be replaced and again a small stock of spare tines should be available.

- Scarifiers should receive the same treatment as grass cutting equipment with the added check of tines, whether steel or spring tines. As with the other machinery, spare tines should be available and changed if broken or worn.

- On all machinery with engines, empty the fuel from the tanks when storing, remove batteries and ensure they are kept fully charged. Always ensure that the top of the plates are not exposed.

- Pneumatic tires are best slightly deflated and any machines with springs on them should be stored with the load taken off the springs. 'V'-belts are best removed and stored in a cool dark place.

- Any overseeding equipment should be checked thoroughly as this is going to be one of the first machines to be used in the spring. Many of these machines have rub-

ber belts or rollers and these should be checked to ensure they are not perished or split. Those machines that have nylon disks or rollers should also be checked for chips or splits.

Tractors

- It should be best practice that tractors and any other vehicles are checked daily, weekly and monthly, according to the manufacturer's handbook, however when there is more time available then some of the more mundane tasks such as cleaning down the engines with an appropriate engine cleaner and checking nuts and bolts can be carried out.

- Remember that you rely on your machinery to get your job done and to make life easier for you so ensure that it is always maintained well and that basic 'spares' are kept in stock.

Theft

- While on the subject of machinery, it is a wise move to list all of your machinery details: make, name, colour, serial number, engine number and any other details from the manufacturers' plates on the machines.

- In the case of theft, and this is a growing problem, especially in unattended buildings in isolated areas, these details will be invaluable to the police and insurance companies.

- The winter months are especially vulnerable and the thieves' best friend, when it is dark and most of us finish work earlier than in the summer months. ♦

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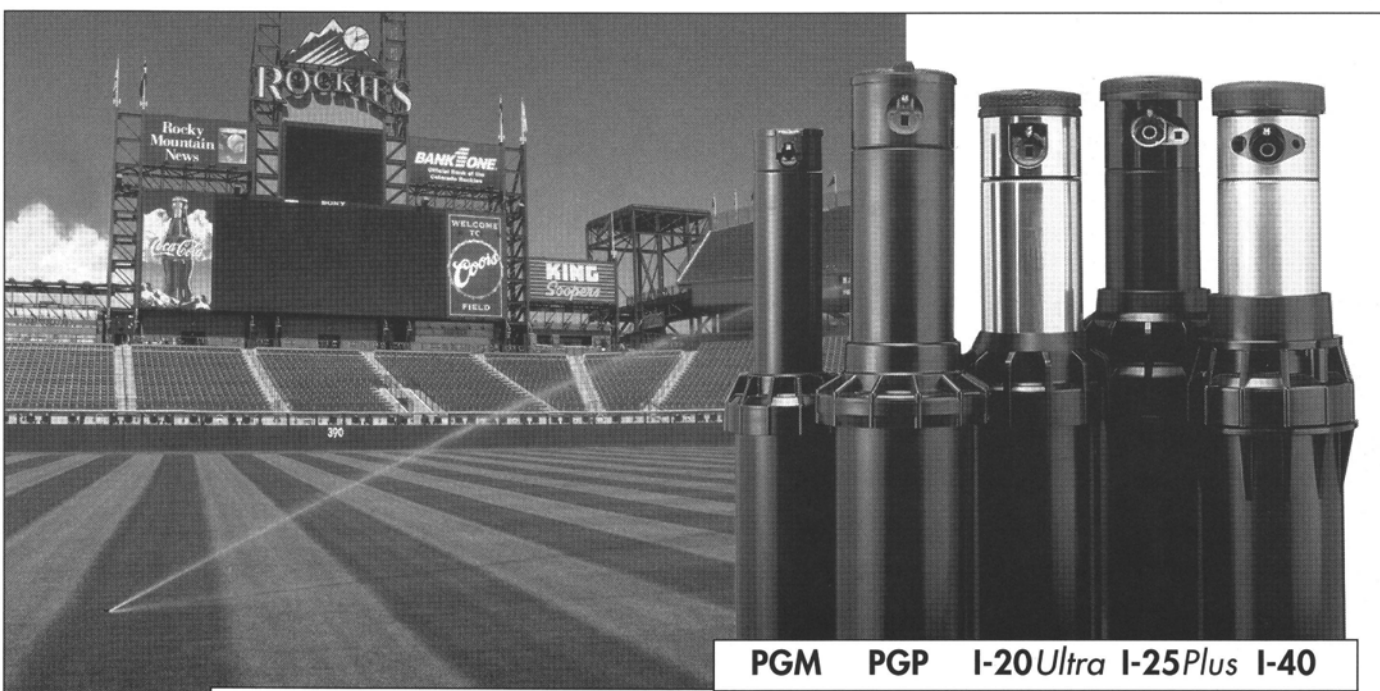


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Biological Control of Turfgrass Snow Molds

DR. TOM HSIANG • DEPARTMENT OF ENVIRONMENTAL BIOLOGY • UNIVERSITY OF GUELPH

For the past six years, researchers at the University of Guelph have been working on a biological control system for turfgrass snow mold diseases. Work began in 1994 by looking for better strains of a fungus that could suppress gray snow mold disease caused by the fungi *Typhula ishikariensis* and *Typhula incarnata*.

Former Guelph professor Dr. Lee Burpee and Dr. Naoyuki Matsumoto in Japan had found that some strains of a fungus named *Typhula phacorrhiza* could inhibit gray snow mold disease. As a result, strains of *T. phacorrhiza* were collected from corn fields across southern Ontario. By 1997, five strains had been identified from several hundred that worked as well at suppressing gray snow mold as conventional fungicides.

In 1998, a new research phase began with funding from the Canadian Turfgrass Research Institute, Nu-Gro Corporation and the Natural Sciences and Engineering Research Council of Canada. As a result of the increased funding, the study was expanded to sites across Canada and more intensive work began on biological processes involved in suppression.

Although *T. phacorrhiza* can be found in abundance in corn fields after the snow melts in spring, the large majority of these isolates have little or no effect against gray snow mold. Since 1998, researchers have also tested and observed suppression of pink snow mold by *T. phacorrhiza*.

Work is continuing on developing ways of growing and formulating the inoculum of a select isolate of *T. phacorrhiza* (TP94671) that is antagonistic to both gray and pink snow mold, as well as studying the biology of their interactions. It is hoped that a granular product can be registered within two years that can be applied with conventional turf management equipment.

Snow Molds

The disease gray snow mold is caused by two species of fungi known as *Typhula ishikariensis* (with tiny dark black sclerotia) and *Typhula incarnata* (with small red sclerotia). The fungus *Microdochium nivale* causes pink snow mold. These diseases can be found on grasses and cereals

and are common in areas with heavy and persistent snow cover.

In Canada, these diseases are typically controlled with fungicides containing mercury, quinterozone or thiram. However, the cost of applying these synthetic fungicides, coupled with environmental concerns, has led researchers to investigate alternative management approaches.

Typhula phacorrhiza

The fungus *Typhula phacorrhiza* is a close relative of the organisms that cause gray snow mold. It is referred to as a saprophyte, which is a type of organism that lives on dead organic matter. It can be found in regions all over the world which typically have abundant organic matter (such as forest litter), and at least a few weeks of snow cover or near-freezing temperatures.

In Canada, this species is most commonly associated with corn stalk residue after snowmelt. It is a psychrophile, which means that it likes cold temperatures. Under laboratory conditions, the fastest growth rate for this organism is around 15°C. In many ways it is similar to the gray snow mold fungi, but it is not known to cause any turfgrass diseases. (Although it has been found to be associated with dead patches of grass after winter snow melt.)

Experimental results

In the first years of research, several hundred isolates of *Typhula phacorrhiza* were collected and tested in the lab for growth rate and production of resistant structures known as sclerotia. It is the sclerotia that allows this organism (and other organisms with sclerotia) to survive unfavourable conditions.

After winter field testing of some of these isolates, it was found that they have a large variation in their ability to suppress gray snow mold. However, in replicated and inoculated field trials, the most active *Typhula phacorrhiza* isolates are suppressive to gray snow mold caused by either *Typhula ishikariensis* or *Typhula incarnata*. These results were consistent in three years of field tests.

The residual efficacy of the best



Figure 1: Trial sites for winter 2000-2001 to test the control of snow molds by a select isolate of *Typhula phacorrhiza*.

Typhula phacorrhiza isolates was also examined, and after five years of field testing, it was discovered that a single application of *Typhula phacorrhiza* in the first year can suppress gray snow mold disease for the next three years to an aesthetically acceptable level. In the fourth and fifth years, although suppression was still evident in some plots, the level of suppression was not aesthetically acceptable and less than that of a fungicide check treatment.

Researchers also tested the fungicide sensitivity of select *Typhula phacorrhiza* isolates. The results showed that mycelia (fungal strands) are sensitive to all snow mold fungicides, but *Typhula phacorrhiza* mycelium is less sensitive to the fungicide Arrest® (thiram/carbathiin/carboxin) than *Typhula incarnata*, and less sensitive to Tersan® (benomyl) than the pink snow mold fungus. This means that an integrated disease management program could be developed that incorporates both the use of conventional synthetic fungicides such as Arrest® and Tersan® along with *Typhula phacorrhiza*.

Following the winter of 1999, researchers observed strong suppression of naturally occurring pink snow mold by *Typhula phacorrhiza* in trials near Barrie, Ontario. Although the suppression of pink snow mold by *Typhula phacorrhiza* had been observed in trials at the Guelph Turfgrass Institute, this effect was not specifically tested for since the main target in earlier research was gray snow mold.

In 1999, researchers set out to test the effect of *Typhula phacorrhiza* on pink

snow mold in replicated tests across the country. Unfortunately for snow mold fungi and for researchers, the duration of snow cover across most parts of the country has been lessening in recent winters, which meant snow mold disease pressure was not sufficient in most locations for a proper test of suppression.

However, excellent results were obtained from a golf course high atop the Rocky Mountains (Figure 2). Researchers had asked the staff to leave a 30m x 30m sward of creeping bentgrass fairway untreated in the fall of 1999 in order to test snow mold control.

In the back part of the test area (Figure 2) were fungicide trials with existing and new fungicides. The best suppression of snow mold by any fungicide in this test was less than 85 per cent, while some treatments showed little to no suppression of the heavy disease caused by both pink and gray snow molds in this area.

In the front of the test area, there was a separate small trial with *Typhula phacorrhiza* and three other treatments. Only the four 1m x 1m squares of green

are visible and these had been treated with *Typhula phacorrhiza* the previous fall.

On average, the disease control in the *Typhula phacorrhiza*-treated plots was over 97 per cent, while in untreated plots, there was heavy damage by both pink and gray snow molds. This again demonstrated that *Typhula phacorrhiza* could provide protection against very heavy disease pressure caused by both snow molds.

Since 1999, researchers have been working on a registration package for *Typhula phacorrhiza*. In order for a pest control product to be sold in Canada, it must be approved by the Pest Management Regulatory Agency (PMRA), which is part of Health Canada. The PMRA requires the following information in order to review whether a product should receive registration in Canada: product characterization; human and animal toxicology of product; environmental toxicology of product; and efficacy of product.

As for product characterization, genetic tests have been conducted with DNA, and growth rates and growth conditions have

been measured for select isolates. This has enabled researchers to distinguish the best isolates from other closely related isolates and this allows them to track the fate and dispersal of the organism.

The toxicology of this organism (whether it causes problems for humans and animals) has not been studied in any detail. There are no reports of this organism or any closely related organisms causing harm to humans or animals. The requirement for full toxicological examination of biological control agents may be the major obstacle to their implementation since the costs are prohibitive.

There is already an abundance of details on the efficacy of this product particularly in southern Ontario, and this year's research will be expanded to sites across the full breadth of this country (Figure 1). Efforts have also been directed to investigating the biology of *Typhula phacorrhiza* as well as ways to produce it in large quantities. Hopefully, a granular product that can be applied with conventional turf management equipment will be available within the next couple of years. ♦

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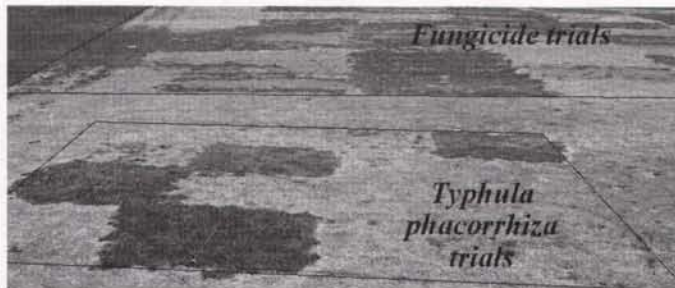


Figure 2: Snow mold trials at a golf course in the Canadian Rocky Mountains photographed on April 27, 2000. The plots in the background of both pictures are snow mold fungicide trials. The plots in the foreground are *Typhula phacorrhiza* trials composed of four treatments with four replications.

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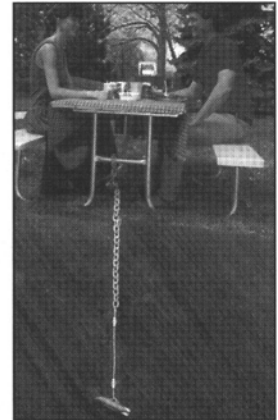
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