

SPORTS TURF MANAGER

... for safe, natural sports turf

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ONTARIO TURFGRASS SYMPOSIUM, JANUARY 19-21

What's new for 2004?

Exciting New Location. Sheraton on the Falls is Niagara's foremost four diamond resort hotel located only minutes from most of the area's top attractions.

More Dedicated Trade Show Hours. In response to exhibitor feedback, we now have a full morning of trade show only – 8:00 am until 1:00 pm on Jan. 20th with no competition from educational sessions. An added bonus is the complimentary breakfast from 8:00 to 9:00 am.

Voluntary IPM Accreditation CECs. See inside on page 4 for details.

New Facility Management Program. A new session will feature presentations on hosting world class sporting and entertainment events.

Using Compost on Turfgrass Pam Charbonneau

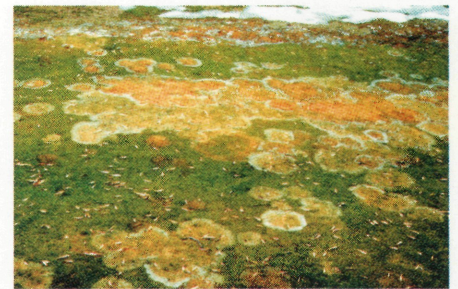
APPLICATIONS HAVE REDUCED PINK AND GREY SNOW MOULD

Snow mould diseases such as typhula blight (*Typhula ishikariensis*, *Typhula incarnata*) and fusarium patch (*Microdochium nivale*) are turfgrass diseases that can damage sports fields. Fungicides are not commonly used on sports fields because of the cost and general trend toward pesticide reduction in the municipal arena. An alternative to snow mould management is the development and use of organic amendments such as composts, organic fertilizers, and sewage sludges. The use of composts and other organic amendments for disease suppression represents an exciting alternative for sports fields.

To date, applications of compost to turfgrass have been shown to reduce thatch, provide a rapid spring green-up, increase turf density, provide nutrients, increase earthworm activity and enhance soil microbial activity.

Composts are known to suppress plant diseases through a combination of physiochemical and biological characteristics. Physiochemical characteristics include any physical or chemical aspects of composts which reduce disease severity by directly or indirectly affecting the pathogen or host capacity for growth. Some of these factors are nutrition of pathogen or host, soil organic matter, soil moisture, soil pH, turf colour, and fertilizer effects, to name a few.

Biological disease control could be a result of microbial populations of composts which are competing for nutrients with pathogens, producing antibiotics and enzymes. Microbes can also parasitize plant diseases or feed on them (see Table 1 on page 6 for a summary



DR. TOM HSANG, UNIV. GUELPH

Top: A mix of grey and pink snow moulds on creeping bentgrass and Kentucky bluegrass (background). **Above:** Grey snow mould, with sclerotia, on the left. Pink snow mould (slightly smaller) on the right.

of microbial characteristics influencing disease suppression with composts).

Compost is considered a beneficial material because the high... → page 6

Merry Christmas



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STA OFFICE HOURS

Lee Huether is in the office from 9:00 a.m. to 2:00 p.m. Tuesday through Friday. The office phone number is (519) 763-9431. At other times, a message may be left on the voice mail system. Please include the vital information of name, telephone number with area code, and time of calling. The office may be reached at any time by faxing (519) 766-1704 or via e-mail.

The President's Desk

PAUL TURNER



Seasons Greetings...

Wow!! Time has certainly flown by this year and it is hard to believe that my term as President of the Sports Turf Association is coming to an end. I

trust you all had an enjoyable summer but this fall just wasn't the norm – too wet and cold. It reminded me of England, a country I left to stay clear of the rain!

Heading to the Falls

I would like to remind all of you to pencil in your day planners and register to attend the Ontario Turfgrass Symposium in Niagara Falls. The dates for 2004 are January 19th to 21st. There is an outstanding speaker program for all industry sectors: sports turf management, golf, lawn care, sod production and managing special events. The OTS Executive Committee has worked long and hard to provide excellent educational seminars which allow for continuing accreditation credits for golf courses and parks, new this year through the IPM-PHC Council.

OTS 2004 has an enhanced educational program because of our joint involvement with new partner the Ontario Recreation Facilities Association. Their knowledge and expertise in this type of event is unbelievable.

With the move from Toronto to the beautiful Niagara Falls area, we hope this change of venue will result in an invigorated show. The old venue was getting a little tired and if you plan to attend, I believe you will love the new location at the Sheraton on the Falls. The rooms facing the spectacular falls are selling fast, so book now!

The key to the show's success is for all of you to try and attend. Cost for the three-day program is very reasonable and I am sure we will all leave with some great

knowledge and insight. So come on members, lets go to the Falls!

The STA Annual General Meeting will be held the morning of January 21st, just prior to the start of the show. We invite you all to join us for a wonderful breakfast and take part in the AGM forum. This year we have one board member stepping down, Chris Mark from the Town of Oakville. Chris has been a long-time board member and is also a Past President of the Association. Chris, your knowledge and expertise will be greatly missed. We wish you well in your new position and look forward to your possible return to our board.

Mark your calendars now for OTS 2003, January 19-21 in Niagara Falls. Look forward to enhanced programming and a new venue!

Turf Trades

For the year 2004, we are expanding our services by launching a web employment bulletin board called *Turf Trades*. We encourage all municipalities and companies to post job listings online with STA. Our site offers a targeted audience of turf professionals and students who may be looking for employment. There is, of course, a minimal cost but it is far lower than traditional newspaper and large online employment site advertising. See page 19 for more details.

Final Perspectives

As I sit at my computer reflecting back on my last two years as President, I honestly don't know where the time has gone. It seems like only yesterday that Jane Arnett-Rivers and Lee Huether were advising me as to the duties as President and what to expect. Over the last couple of years, I believe we have... → page 4

The President's Desk *continued...*

improved the Association for the road ahead. We implemented the new website which has been a great success, and convenient Visa and MasterCard payment options for members. This alone has made life easier for Executive Manager Lee Huether and has helped with our cash flow. The office is now up to speed in the technology area and we should be in good shape in this respect for the next few years.

The Field Day, through the help of the committee members, suppliers and sponsors, has risen to never before seen levels. Attendance has increased markedly over the last three years and as a small association, we rely on this annual event for a major part of our revenue.

The Association is, however, going to be facing some potentially tough budget decisions going into the next few years. We will need to become more creative in how we do things, particularly with respect to raising revenues. Costs are rising for us all through things like insurance, printing, labour, etc., but I believe we have the people in place to make these decisions easier.

To Andrew Gaydon who will be President in 2004, I wish you all the best. To Lee, thank you for making this term whiz by efficiently. To all the other wonderful board members, thank you for also making the past two years seem like just yesterday. Wishing you all a Merry Christmas and Happy New Year. ♦



More Benefits for OTS 2004 Delegates!

PROFESSIONAL DEVELOPMENT ACCREDITATION ENHANCED

OTS, the premier education and trade show for the Ontario Turfgrass Industry being hosted January 19-21, 2004 in Niagara Falls, will provide professional development recognized and accredited by the industry's leading associations including the Sports Turf Managers Association, the Canadian Golf Superintendents Association, the Golf Course Superintendents Association of America, and the IPM-PHC Council.

The additional accreditation of the OTS educational seminars through the IPM-PHC Council this year will provide professionals with over 15 continuing education credits toward the voluntary accreditation of their companies, golf courses and parks. The expansion of accreditation opportunities reinforces the 2004 OTS theme, *Leading through Learning*. For more information and registration details visit the OTS website at www.open.uoguelph.ca/ots.

Register now for the industry event of the year!

2004 Ontario Turfgrass Symposium

**Educational Conference & Trade Show, January 19-21, 2004
Sheraton on the Falls, Niagara Falls, Ontario**

Two Ways to Save...

Visit www.open.uoguelph.ca/ots for details...

1) Association Discount. As an STA member in good standing, you qualify for lower association rates. **2) Group Discount.** Others from your facility/organization who are not STA members **when registered with a member** qualify for the lower association rates. Send the registration in the same envelope, fax it at the same time, or make just one phone call to register.

Odds and Ends

Cold... A Deadly Winter Hazard

In Canada, more than 80 people die each year from over-exposure to the cold. Over a five year period (1992 to 1996), Statistics Canada reported 411 people died from frostbite, hypothermia and other cold injuries. Exposure to extreme cold claims more lives in Canada than lightning, floods or tornadoes combined! For more details on windchill, visit, www.msc.ec.gc.ca/education/windchill/windchill_fact_sheet_aug_10_e.cfm (*Envir. Canada*)

Quotes of the Month

If all the year were playing holidays, to sport would be as tedious as to work.

— William Shakespeare, "King Henry IV Part I," Act 1 Scene 2

Winter is on my head, but eternal spring is in my heart.

— Victor Hugo (1802-1885)

STA Membership Plaques

Display membership plaques are available in executive engraved walnut for \$50 plus S&H. To order, contact Lee at the STA office.

Spring 2004 Submissions

If you have something you'd like to submit for the next issue, please forward it to the STA office by January 30, 2004.

Editorial Content

Opinions expressed in articles published in *Sports Turf Manager* are those of the author and not necessarily those of the STA, unless otherwise indicated.

Voice Your Opinion!

We appreciate member feedback. To make this process easier, we have a form on our website, www.sportsturfassociation.com, under the "newsletter" link called *Feedback*. Check it out!

Coming Events

CHECK OUT WWW.SPORTSTURFASSOCIATION.COM FOR UPDATES...

January 6-8, 2004

Ontario Golf Course Management
Conference and Trade Show
Toronto, ON
Information: (905) 602-8873 x 222

January 13-15, 2004

Landscape Ontario Congress
Toronto, ON
Information: (905) 875-1805
www.locongress.com

JANUARY 19-21, 2004

Ontario Turfgrass Symposium

Sheraton on the Falls
Niagara Falls, ON
Information: (519) 767-5000
www.open.uoguelph.ca/ots

January 21 (at the OTS)

Sports Turf Association Breakfast and Annual General Meeting

Information: (519) 763-9431
info@sportsturfassociation.com

January 21-25, 2004

Sports Turf Managers Association
(USA) Annual Conference &
Exhibition
San Diego, CA
Information: (712) 322-7862
www.sportsturfmanager.com

February 17-21, 2004

Turfgrass Producers
International Midwinter
Conference and Exhibition
Santa Barbara, California
Information: (847) 705-9898
www.TurfGrassSod.org

February 21-25, 2004

Western Canada Turfgrass
Association 41st Annual
Conference & Show
Victoria, BC
Information: (604) 467-2564
www.wctaturf.com



March 3-7, 2004

Canada Blooms, Toronto, ON
Information: (416) 447-8655,
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www.canadablooms.com

March 24-25, 2004

Ontario Parks Association
48th Annual Educational Seminar
and Explorations Trade Show
Hamilton, ON
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Using Compost on Turfgrass • Cover Story Continued...

APPLICATIONS HAVE REDUCED PINK AND GREY SNOW MOULD. RESULTS FROM THE GUELPH TURFGRASS INSTITUTE

proportion of organic matter may prove beneficial in a high sand content rootzone by increasing soil microbial populations and providing cation exchange sites. High levels of microbial activity in composts have been postulated as the primary mechanism of disease control by a number of researchers.

Disease suppressive composts can be used as a replacement for peat or any other organic materials used in a regular sports field topdressing mixture which generally contains 80% sand and a 20% organic source such as peat or topsoil. Another way that they can be used, particularly for snow mould control, is a once per season application of compost alone just prior to snow fall.

Although the use of compost may not control turfgrass diseases to the degree that fungicides can, their integration into current disease management practices may result in a significant reduction in disease problems on sports fields. An additional benefit derived from using compost in a fall and/or winter application is the potential for increasing spring green-up, which in turn can speed recovery from snow mould disease and winter injury.

Studies at Guelph Turfgrass Institute

Field plots were established at the Guelph Turfgrass Institute, Guelph, ON, to evaluate the ability of composts to suppress grey and pink snow mould. Research was carried out at two locations, one on a creeping bentgrass green maintained in summer at 4 mm height (green height), and one on a creeping bentgrass range maintained in summer at a 25 mm height (fairway height).

Two composts (batches A and B) were applied on December 1, 1998 at two rates of application: 48.7 and 97.6 kg (dry weight)/100 m² (100 lb, and 200 lb/1000 ft²) onto turfgrass.

To increase the level of disease, research plots (1 x 2m) were inoculated with the fungal pathogens responsible for pink and grey snow mould, *M. nivale* and

T. ishikariensis respectively. Quintozene was applied on control plots according to the manufacturers' recommended rates (318 g/100 m²).

To get a better understanding of the role nitrogen in compost has on snow mould and spring green up, a control of sulphur coated urea (25-0-0), applied at 33.3 g/m² (equivalent to the amount of nitrogen in the compost batches when applied at the 48.7 kg/100 m² (dry wt.) rate) was included. This was equivalent to the nitrogen content in compost A (1.83 N-2.00 P-0.96 K) which was higher than the nitrogen content of compost B (1.71 N-1.29 P-0.81 K).

Plots were rated visually once a week for *M. nivale* and *T. ishikariensis* on April 14 until May 4, for green-up (recovery from winter dormancy) and rated for disease severity on April 14 and 21.

Results

The two composts, along with the fungicide control, were similar in their ability to suppress snow mould diseases. In addition, fertilizer treatments generally had higher disease severity compared to compost treatments on the creeping bentgrass green and on the creeping bentgrass range. A single application of 97.4 kg/100m² gave the same level of control as the fungicide quintozene.

This study also determined the ability of fall compost applications to speed the green-up process of turfgrass in the spring. Although the two experiments were located in distinct areas of turf management, the assessments of green-up were similar.

There were significant increases in green-up in compost treated plots compared to the fungicide control. These

Mechanism of Suppression	Description
Nutrient competition	Microbial activity out-competes pathogens for nutrients, preventing their growth and germination
Antibiosis	Organisms are inhibited by metabolites of micro-organisms; may be a survival or competition mechanism
lytic and other extracellular enzymes	Enzymatic compounds are produced by a variety of microorganisms to decrease growth and survival of others; often done to decrease competition for nutrients, space and other factors
Parasitism and predation	Mycoparasites can reduce the concentration of inoculum of a pathogen by enhancing degradation of dormant propagules, interfering with their formation or inhibiting their germination
Host-mediated induction of resistance	Micro-organisms or other chemical or physical factors in organic amendments can promote plant growth or induce plants to produce certain enzymes related to defense mechanisms

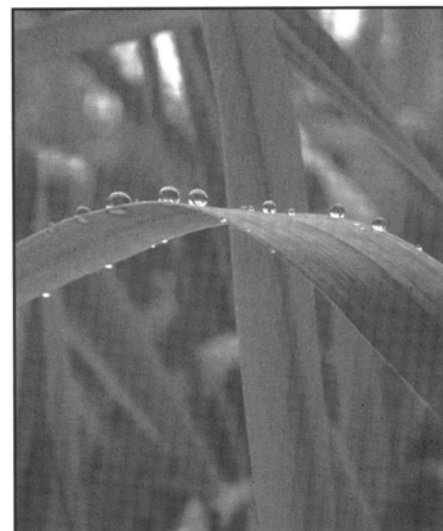
Table 1: Microbial characteristics influencing disease suppression with composts.

improved differences in green-up among treatments diminished over the four week rating period, after which the controls approached or were the same as the compost treated plots.

One interesting result of this experimentation was that fertilizer treatments displayed a lower level of green-up when compared to compost treatments. Another interesting discovery was that the higher compost rate showed a significantly higher level of green-up compared to the lower application rate on the creeping bentgrass green, although this effect was not observed at the creeping bentgrass range location.

carbohydrates. However, for composts with higher levels of nitrogen and other available nutrients, disease suppression may also have been a result of enhanced turfgrass nutrition allowing for more rapid recovery from disease (Craft and Nelson 1996).

The ability of selected composts to suppress disease in turfgrass has been reported. For example, an 80-90% reduction in disease was obtained with a late spring application of yard trimmings compost (Block 1997). Other researchers have reported that although compost did not prevent the occurrence of snow mould, it increased the recovery of grasses from



References

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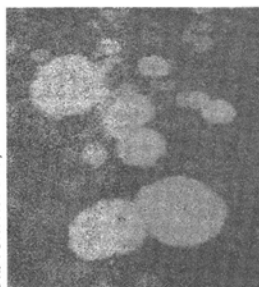
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Acknowledgements

This research was supported by an Industrial Research Assistance Program (Canada) to All Treat Farms, Arthur, Ontario, Canada. Research by G.J. Boland and J.T. Trevors was also supported by NSERC (Canada) operating grants.

DR. TOM HSIANG, UNIV. GUELPH



One interesting result of this experiment was that fertilizer treatments displayed a lower level of green-up when compared to compost treatments. Furthermore, fall applications of compost were effective as a suppressant to pink and grey snow moulds.

Discussion

In summary, field research was effective in identifying fall applications of compost as a suppressant to pink and grey snow moulds. In addition, turf that received compost applications displayed a more rapid rate of spring green-up than turf which was treated with fertilizer or fungicide.

The higher rate of compost (97.4 kg/100 m²) generally had a greater ability to suppress disease compared to the lower rate (48.7 kg/100 m²). This may have been a result of a combination of increased nutrient availability, increased antagonistic or competitive interactions among microorganism populations or their metabolites, or the darker colour density of the higher compost application rate may have increased ground heating and promoted more rapid recovery of turf.

Other than fertilizer effects, nitrogen is known to increase fungal and bacterial populations in turf and play a major role in microbial population dynamics (Liu *et al.* 1995). It is essential for the production of many compounds involved in host resistance including phenolics, phytoalexins, growth hormones, cellulose and

the disease (Block 1997). It was postulated that the dark colour of the composted material increased radiant heat absorption, increased nutrient levels and stimulated growth (Block 1997).

Most research on snow moulds has focused on biological control of *Typhula* spp. with antagonistic microorganisms. However, physiochemical factors, including colour, fertilizer effects and other factors, are often implicated in control. Researchers have generally supported the proposal that microbial populations in compost provide nutrients and other chemical compounds to competing microorganisms and plant hosts through continual breakdown of composted material. There are also a number of examples where nutrient competition has been a factor in suppression of plant pathogens.

On the creeping bentgrass green, compost applications increased the rate of green-up and playability more quickly than fertilizer applications. As a result, nutrients are not postulated to have played a significant role in green-up. However, turf height and increased available water on the green surface may have encouraged

microbial activity compared to the fairway area, allowing for breakdown and release of nutrients and other antagonistic compounds.

Other than fertility, the darker colour of the compost may have had an impact on spring soil warming, increasing turfgrass growth rate or stimulating microorganism growth and activity. A heating effect may have stimulated earlier activity of mycorrhizae, thus increasing nutrient availability to turf. In addition, the heavy compost layer may have held more water than the lighter rate, increasing water availability to turf.

Compost is becoming a more established and accepted means of suppressing plant diseases.

On fairway height creeping bentgrass, fertilizer treatments were not significantly different from compost treatments in their ability to promote early spring green-up on most rating dates. In this case, the effect of compost on green-up may have been more of a nutrient effect. A heating effect may have been less of a factor as compost may have been more rapidly incorporated into thatch, falling deeper into the stand (25 mm), which may have shaded it from early spring sunlight. Compared to the green location, the fairway height was exposed to winds and also developed increased ice cover, which may have increased desiccation and lessened microbial competitive capabilities.

Summary

Compost is becoming a more established and accepted means of suppressing plant diseases, including pink and grey snow mould in turfgrass. With the added benefit of promoting early spring green-up, use of compost seems like a win-win situation for sports turf managers. ♦

Adapted by Pam Charbonneau, Turfgrass Specialist, Ontario Ministry of Agriculture and Food, from an article written by Jeanine Boulter, Univ. of Guelph, Laboratory Services Division, for *Greenmaster Magazine*, Vol. 37, No. 2, April/02. Boulter is currently working as a microbiologist at the Univ. of Guelph.

Study Looks at Injuries with Artificial Turfgrass

TYPES AND CAUSES OF INJURIES IN CANADIAN FOOTBALL PLAYERS

NEW YORK (Reuters Health), June, 2003. A five-year study of Canadian university football players suggests that playing on an artificial surface rather than natural grass may increase a football player's risk of injury.

Artificial turf is often preferred over grass because of its durability and lower maintenance costs. Also, unlike grass, the surface does not vary according to environmental conditions, while grass can be wet or dry, hard or soft or even frozen depending on the weather.

In the current study, however, the risk of injury was as much as two times higher when the game was played or practiced on artificial turf rather than natural grass, study author Dr. Willem H. Meeuwisse and his colleagues report.

Future studies should take into consideration factors such as the players' shoe type and position, history of injury and the environmental temperature, according to Meeuwisse and his colleagues.

But the type of playing surface was not the only thing that contributed to the football player's risk of injury, the researchers report in the *American Journal of Epidemiology*.

Players injured in the past were more likely to experience an injury in the future. In fact, those with a prior neck injury were five times more likely to experience a subsequent injury, the report indicates.

In light of this finding, Meeuwisse, of the University of Calgary in Alberta, Canada, told Reuters Health that it is important that injuries be treated and players be fully rehabilitated to reduce their risk of future injury.

The players' injury risk also increased with every year of participation in the sport. Men who were approaching their fifth year of playing football, for example, were more likely to be injured than less experienced players. This was true even when the authors accounted for the players' history of injury, the report indicates.

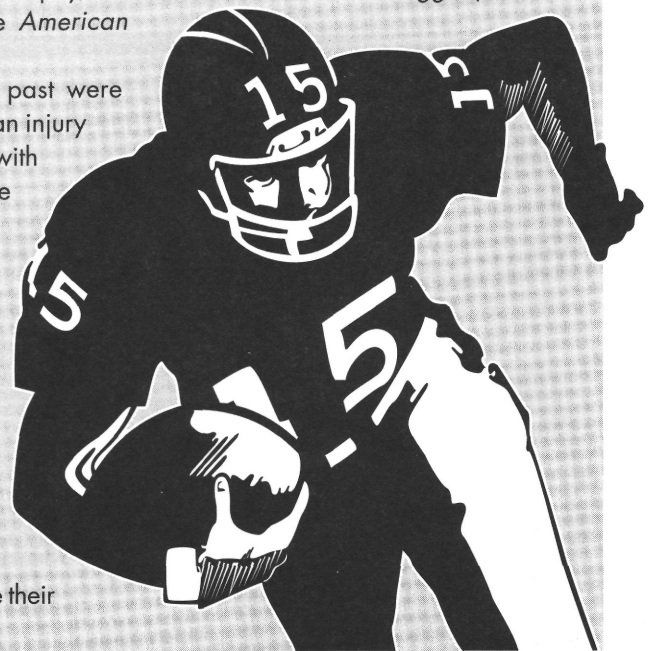
The reason for the increased injury risk among veteran players is unknown.

The athletes, in general, were 10 times more likely to be injured during games than during practice.

Overall, the injury risk factors identified in the current study may not be generalizable to different age groups and play levels since the study participants represented "survivors" who did not experience any career-ending injuries, the researchers note.

The study was conducted from 1993 to 1997 among varsity men's football players in the Canada West Universities Athletic Association. ♦

— *American Journal of Epidemiology* 2003;157:825833
(reported by Charnica E. Huggins)



Downsview Park. Honouring the Past, Building for the Present, Cultivating for the Future

GARTH HARDIE PROVIDES AN UPDATE ON CANADA'S FIRST NATIONAL URBAN PARK

Herbert Boake proudly carries a briefcase full of memories – photographs, books, newspaper clippings, shopping receipts and pamphlets – of his childhood on what is now Downsview Park. The 87-year-old vividly remembers riding his favourite horse, Vesper Bell, milking prize-winning Holsteins on his family's farm, attending morning and evening services at the nearby United Church, planting his father's favourite trees and slinging snowballs with friends in winter.

In 1824, his great grandparents Edward Boake and wife Sarah emigrated from Ireland, bought 100 acres of the present Downsview Park site, planted hay, wheat, oats and barley and raised 15 children. Edward used the money he earned as an ax man building Toronto's Bathurst Street to buy another 100 acres, and the Boakes farmed successfully for generations beside

their neighbours the Duncans, Elliots, Fars and the McGees.

Herbert remembers when de Havilland Aircraft of Canada bought 20 acres to build their first hangar in Toronto. He also remembers 1950, when the government expropriated the rest of the land to build a military base. As a soldier, wounded in Normandy, he understood the reasons. But he is delighted that the land on which he was born is now being returned to nature. After serving for more than 50 years as a Canadian Armed Forces base, the majority of the land in the heart of Greater Toronto is ready to be transformed into Downsview Park – Canada's first national urban park.

"Building a park is a great idea," Herbert Boake says of the new Downsview Park design. "It restores the land to its earlier uses and offers people in the city the opportunity to relax and enjoy their leisure time."

→ page 10



Herbert Boake



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Today, Downsview is ready for a makeover. But before the vision of an action sports complex, cultural commons, meadow, promenade, lakes, paths, forests, gardens and business development facilities to finance the park can be realized, the parklands, fallow and leached from years of non-use, must be restored to fertility in order to serve as a legacy for future generations.

David Anselmi, Vice President of Park Development, says studies have been done to help determine the best strategy going forward.

"We have studied what kinds of soil are found at Downsview, how much of each type there is and where," says David,

who is responsible for creating a park plan and implementing the design developed by Tree City Inc. "Now that the design of the park is being finalized and we can tell what parts of the land will be used for what purpose, we know what needs to be done, in each area, to create ideal conditions for success."

David says one of the biggest challenges is the level of compaction the soil has undergone for the last 50 years. Because the land was regularly tilled, plowed and used for farming, it is highly susceptible to frost penetration. This means tilling, discing and some sub-soiling will be needed. Other challenges include assessing the level of organic

matter in the soil and the presence of gravel, stone and other building materials. For now, David says the grounds are being maintained as grassland. This helps to limit frost penetration until construction of the park begins. The first step in this process is landscaping.

Reudi Hofer is a partner at PMA Landscape Architects, which is a member of the Tree City Inc. design team, designers of Downsview Park. As a prominent voice in environmentally responsible landscape architecture in Canada since 1972 and designer of some of Canada's most imaginative projects, Reudi says Downsview Park is a unique opportunity to demonstrate environmental sustainability and social responsibility in the landscaping process.

Downsview parklands, fallow and leached from years of non-use, must be restored to fertility in order to serve as a legacy for future generations of Canadians.

Reudi says the landscaping process starts with grading – creating the landforms that will give the park its distinctive look and accommodate the action, promenade and cultivation zones that are the keys to the design. This also includes installing sewer, water and hydro systems as well as a network of roads and pathways to serve the park. Then, effective water management, he says, provides opportunities for saving money and improving the environment.

"An effective water management and drainage system is important for Downsview Park," says Reudi, whose accomplishments include innovative green space projects in Erin Mills and an industrial project seamlessly integrated into the Niigon Aboriginal community in Georgian Bay. "Instead of sending the water to a storm drainage system, the goal is to manage the water collected on the site, use it efficiently, and then return it purified to the soil."

Water is needed to irrigate soccer fields and other natural sports surfaces that require maintenance. Creating lakes,

drainage streams and wetlands in the park are crucial parts of this strategy.

Then there is the task of planning the vegetation. Hofer says it takes about 70 years for many trees to mature and about 150 years before a forest can sustain itself without human help.

"If we want to create vegetation that future generations can appreciate soon, we'd better start now," Reudi says. "By integrating vegetation planning into the programming – having a nursery that generates the plants we need to cultivate the park and enrich the soil and educating visitors about cultivation – we start to see real benefits a lot sooner."

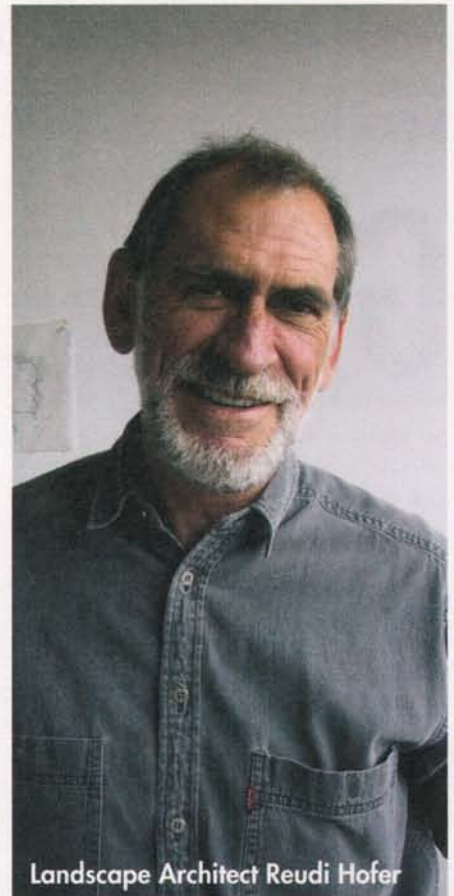
Tony Genco, Executive Vice-President of Parc Downsview Park agrees. Tony, who cherishes his own fond memories of his childhood in Downsview, says the task of returning Downsview to nature and developing the land according to the principles of social, environmental and economic sustainability is a gift from his generation to the children of the future.

"Nourishing the land and building ecosystems that sustain and regenerate themselves is crucial to our mandate of economic, social and environmental sustainability," Tony says. "It is also an important focus in this urban setting, to reconnect with nature, honour their heritage and reflect on the lessons learned over many generations."

For Herbert Boake, those values are priceless. His family's connection to the land is commemorated by a small forest near his birthplace in Downsview Park. It's known locally as Boake's Grove, celebrating his father's love of trees.

"Building Downsview Park and renewing the natural fertility of the land is a great way to capture the spirit of the past, Herbert says. "It is also a great way to connect our children to their past and give them a place to enjoy today as they create their own memories to pass along to future generations."

For further information on Downsview Park contact Garth Hardie at (416) 952-2229. ♦



Landscape Architect Reudi Hofer

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How to Perform Seasonal Engine Maintenance

LARRY VAN DEUSEN GIVES THOROUGH INSTRUCTIONS TO KEEP YOUR EQUIPMENT IN TOP NOTCH SHAPE

Generally, equipment managers “winterize” equipment to increase or maintain performance in winter or prevent problems after long periods of winter storage. However, this is not only necessary in the winter. Many engines that operate in areas that see no winter at all still need this type of service. Therefore, I like to refer to this as *seasonal service*, not “winterizing.”

Step 1: Choose a suitable storage site

The storage location you choose for your equipment is important. If you store the engine out of direct sunlight, your results will be far better. Sunlight causes problems because it warms up metal parts which then cool down when the sun no longer strikes the equipment. This causes water condensation to form. In a semi-sealed area such as a carburetor fuel bowl or a crankcase, this condensation can accumulate. When this happens in cold climates, ice can form in these areas. The result may be broken parts and big repair bills.

However, even in warm climates, this is still a problem because water in the fuel system will cause an engine to run roughly or quit. Plus, if you

allow water to remain in the fuel bowl for an extended period, it can cause oxides to form on the aluminum parts. These white particles often dislodge and plug vital parts such as the fuel passages. I have even found such severe pitting that I had to replace the entire carburetor because some parts had completely dissolved.

Water in the crankcase can blend with the oil or cling to unprotected metal causing rust to form on machined parts.

Sunlight can also cause plastic and rubber parts—such as hoses and rubber manifolds—to fail from prolonged intense exposure. Good storage sites are cool and dark (shaded). In such sites, the temperature is less likely to vary enough to cause condensation to form.

Step 2: Prepare the fuel system

Cooler temperatures also minimize evaporation of fuel during storage. Usually a smaller volume of fuel evaporates more quickly than a large volume of fuel. For this reason, I suggest that you drain your carburetor fuel bowls, but keep the fuel tank as full as you can. Another reason to keep the fuel tank full is to keep the unpainted surfaces of the tank coated with fuel. This will keep rust from forming on exposed areas. One last reason to keep fuel tanks full is that air temperature changes more quickly than liquid temperatures. Thus, the temperature swings won't be as great with a full tank, and you won't end up with nearly as much condensation.

If your equipment has a plastic fuel tank, don't think that you are in the clear. The tank may not rust, but you still have to deal with condensation. Therefore, if the size and situation allow, drain the plastic tank as well as the carburetor. Then you should not have any metal parts that will rust.

This is a good place for a word of caution about two-stroke engines that use a diaphragm-type carburetor. If you drain



Some people perform seasonal maintenance simply because the owner's manual tells them to without understanding that good practical reasons exist to perform this maintenance. It helps the engine perform better and last longer. Seasonal maintenance also reduces down time and repair bills. Whenever an engine does not run for an extended time (6 to 8 weeks or more), regardless of climate, you should perform this service.

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the fuel from these engines, you may cause the diaphragm to crack or harden. In this case, I feel it's wise to keep the fuel tank full and to use a chemical fuel additive designed for storage. In addition, these small carburetors are especially susceptible to varnish formation. This is another reason to use chemical fuel additives instead of draining the system.

Step 3: Repairing any fuel-system problems after storage

If you stored your equipment properly, you will probably have few repairs to make when you bring it back into service. However, if you neglected to prepare your equipment properly for storage, you may need to perform some repairs.

Four-stroke engines. With four-stroke engines, the storage damage you are most likely to experience is gummy carburetors or dirt. The dirt is usually a result of the varnish (the residue left behind after fuel has evaporated) remaining in the fuel bowls. If you catch it early enough, it may be soft and gummy. However, if you leave

it for an extended time, it turns to hard crystals. These crystals can dislodge and float around in the fuel bowl when you add new fuel. They then can plug the small orifices that control the fuel flow to the motor.

To remove varnish in the early stages is easy. Simply spray some choke-and-carburetor cleaner in the problem areas, and it will rinse away. Another trick is to use compressed air for the problem areas and tight passages. The problem becomes more difficult the longer you leave it unattended. If the varnish is hard, you first must use dip-type carburetor cleaner. You usually can find this type of cleaner at automotive-supply stores.

Dip-type cleaner is highly caustic, so be careful in how you handle this material. *Read the label* for soak times and proper clean up. Most carburetor part dips can dissolve small rubber parts, so you must completely dismantle the entire carburetor and remove all rubber pieces before using the dip. Take the carburetor completely apart so the chemical can reach all parts

and passages. In many cases, it may be necessary to soak the carburetor two, three or more times.

Be sure to follow the label's time schedule for keeping the carburetor in the solvent because it can destroy the metal parts if you leave them in the dip for too long. If the dip needs additional time to remove deposits completely, remove and clean the parts and then repeat the process rather than exceed the recommended time limits in a single dip. I have seen some cases where aluminum parts were pitted so badly from excessive dip times that they required replacement.

If you find that your problem areas are in the small air bleeds and vents, use a small parts-tag wire or a torch tip cleaner. However, *use caution* with this method because it is easy to enlarge the holes if you are too forceful.

Two-stroke engines. You can use many of the same methods for two-stroke engines. However, be aware that you may find more rubber parts and diaphragms that the solvents can damage. → page 15



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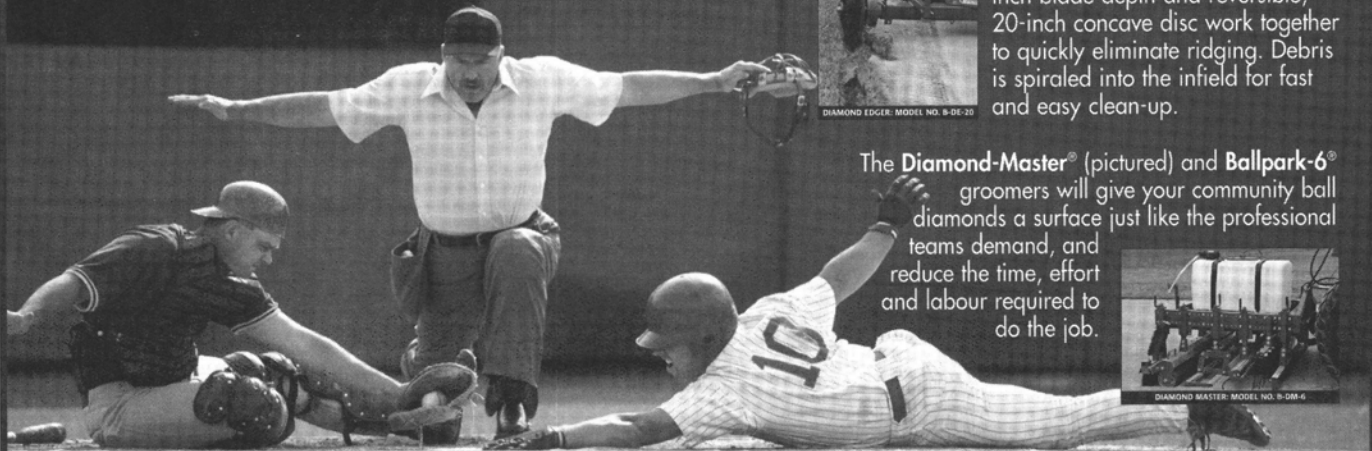


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Fortunately, the oil/gas mixture in two-stroke engines helps keep the varnish in a softer, gummier stage for a longer time.

Step 4: Clean and repair fuel tanks if needed

You can clean fuel tanks in much the same way as carburetors – you just don't have as many parts with which to deal. The first step in cleaning a fuel tank is to drain it to see what kind of problem you may have. If the problem is rust, pour a small pack of BBs in the tank with some parts-washing solution and shake it vigorously. This loosens the large, scaly pieces of rust. After you have shaken them around, pour the BBs into a paint strainer (to save them for use later). Now flush the

20-gallon fuel tank, not a 2- to 5-gallon tank. Read the label to see if it provides specific instructions regarding how much to add. If not, be sure to proportionally reduce the amount you add to account for the smaller tank size.

Step 5: Maintaining fuel- and oil-injection systems

If an oil-injection system (most smaller engines such as trimmers and saws do not use oil-injection) requires repair, it's usually because of dirt that got into the system, not because of some problem with the oil itself. Cleaning oil systems is simple: just disassemble them, wash the parts and reassemble. Oil is quite stable and has a long shelf life. Therefore,

filters as well as the injectors. This will prevent any fuel contamination from entering your new injectors.

A few final notes about fuel:

- Although it is possible that dirt or water in your fuel system came from your fuel supplier, don't overlook your own storage containers.
- All fuel systems benefit from in-line fuel filters, but make sure the ones you use are suitable for your system – fuel-injection systems use high pressure or volume and can tear a conventional filter apart.
- Reformulated gasoline usually contains alcohol which has a natural tendency to draw moisture from the air around it. If you are in a region where reformulated gasoline is used, be aware that storing your equipment with this type of fuel in an environment with high humidity can cause a buildup of water in the gas just by letting it sit around. Don't forget that this can happen with gas cans too, not just fuel tanks.



“Winterizing” is not just for equipment in cold-weather climates. Any equipment that sits idle for long periods needs extra attention. Thus, I like to refer to this as “seasonal service.”

tank several times with clean parts-washing solvent to remove any remaining loose debris.

If you caught the problem early, you might not have to do anything more than this. However, if you find pitting or small holes in the tank, you will need to seal the inside of the tank with a liquid seal *made specifically for gas tanks*. Avoid other types of sealers because the fuel might dissolve them, causing more problems farther downstream (in the carburetor).

Just because you have a plastic fuel tank on your equipment, you are not out of danger. Dried fuel can still cause a varnish-type material to form in the tank, and it can plug the fuel system just as badly as rust. Fortunately, the BB method works as well in plastic tanks as it does in steel tanks. Although plastic tanks are not maintenance-free, they still are more trouble-free than steel tanks. Thus, if you have to buy a replacement, select a plastic tank if it's available for your equipment. If you use fuel additives, be sure they are compatible with your fuel system. Keep in mind that manufacturers usually market these additives for automobiles. Therefore, the containers often are scaled for a 15- to

storage doesn't usually affect its quality. The best advice I can give you is to stay with a known brand of oil instead of a generic type.

Conversely, fuel-injection systems are prone to some long-term storage problems. One of the most common is gumming from varnish buildup. This will cause injector units to malfunction. No really good way exists to drain an injector unit completely, so the best prevention is to use chemical fuel additives for storage instead of trying to drain the system. If an injector still works but you don't feel it is running quite right, you can try additives for injection systems that you pour directly into the gas tank. As the fuel passes through the system, it will clean *light* deposits from injectors. Other than this, the only way to repair an injector is to replace it with a new one, so heavier deposits may require you to replace the injectors.

If you have to change an injector, be sure to wait until all of the engine parts (especially mufflers and manifolds) are completely cool. Moreover, be sure to clean up any spills that happened during the repair. Remember to change all the fuel

Step 6: Consider seasonal service for cooling systems

Up until now, this discussion has applied to air-cooled as well as liquid-cooled engines. However, the cooling system itself also needs attention every year on your liquid-cooled machines. Most equipment today is either all aluminum or at least has aluminum heads and radiators. Thus, it is important to use only coolants that are compatible with aluminum systems. Fortunately, most coolants are suitable. The problem usually shows up with fleet accounts that buy coolant in 55-gallon drums. Occasionally, an equipment manager will purchase bulk coolant that is suitable only for steel protection and then, forgetting this fact, use the coolant that's on hand for all the engines.

Aluminum radiators transfer heat efficiently until they begin to plug with mineral and dirt buildup. Thus, you should change the coolant at least once a season. Use distilled water when blending the 50/50 mix to prevent mineral buildup in the cooling system. At the same time, also check all hoses for cracks and soft spots that could cause costly...

→ page 16

downtime the following season. In addition, inspect the belts for cracks or other damage and check the operator's log for any reported cases of overheating. If so, now would be a good time – while the system is drained and flushed – to replace head gaskets and thermostats. These are the two most common causes of overheating.

Finally, always check the coolant level and, in cold climates, check the level of freeze protection your coolant offers. Testing laboratories can evaluate coolants and give an indication of system wear and other problems before they get out of hand. This type of testing is called "cool scan."

Remember that the engine is only part of the equipment. Gear boxes and drive trains also have special needs for seasonal storage.

Step 7: Don't forget the rest of the equipment

Finally, remember that the engine is only part of the equipment. Gear boxes and drive trains also have special needs for seasonal storage. These components are often sealed and forgotten – until they fail. When they do, they can be as costly to repair and cause as much downtime as any engine.

When you shop, look for features such as plastic tanks and the quality of the fuel and cooling systems. These are often-overlooked aspects, but making the right choices could save you a lot of maintenance expense down the road. ♦

— Larry Van Deusen is an instructional support associate at the State University of New York-Cobleskill.

Quick Tips for Proper Long-Term Storage



For proper long-term storage:

- Choose a shaded, cool storage site.
- Keep metal fuel tanks full, but drain plastic fuel tanks.
- For 4-stroke engines, drain the carburetor bowls.
- For 2-stroke engines and those with fuel-injection, use chemical additives (fuel stabilizers) instead of draining the carburetor.
- Be especially wary of storing reformulated gasoline, which can absorb water directly from a humid atmosphere.

To repair rusted or varnished fuel tanks:

- Shake BBs and parts cleaner in the tank to remove debris.
- Use a fuel-tank sealer to repair any pitting on the inside of the fuel tank.
- If you need to replace a tank, use a plastic replacement.

To remove varnish deposits:

- Use "choke-and-carburetor cleaner" to remove light varnish deposits in carburetors.
- For heavy deposits, dismantle carburetor and clean with dip-type carburetor cleaner.
- For small air bleeds and vents, use a tip cleaner or small wire to clear the orifice.

For fuel-injection systems:

- Use "fuel-injection cleaner" (fuel additive) for light varnish deposits in the injectors.
- Replace injectors with heavy varnish deposits.
- Be sure you also replace fuel filters when you service the injectors.

For good cooling-system performance:

- Use only distilled water for your coolant/water radiator mix.
- Make sure the coolant is aluminum-compatible.
- Have your coolant tested for freeze protection.

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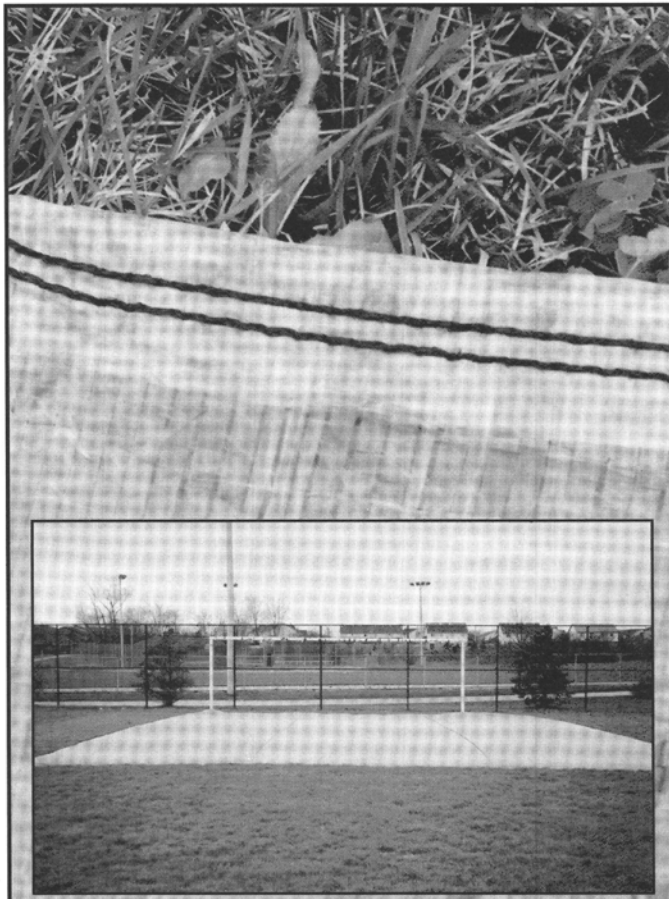
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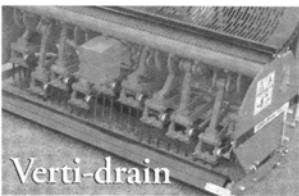
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Excerpt from *Wanted: Eager Young Turf Pros*, Goatley, Mike and Jeff Krans with additional reporting by Jim Guyette, *Athletic Turf*, April 1999 reprinted in *Sports Turf Topics* 1999-2000, Sports Turf Managers Association.



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Employment Bulletin Board ads run for 60 days with an additional 30 days available at 1/2 the price. Cost is \$75 for STA members and \$100 for non-members for the initial 60 day period. Payment by cheque (Canada only), MasterCard or Visa must accompany the job description. Jobs will be posted in a standard page format. Forward your submission, with all necessary details, to New Paradigm Communications: rob@npc-solutions.com, 519-371-6818, fax 519-371-5789.

For information on other advertising opportunities available through the Sports Turf Association, contact Lee Huether at info@sportsturfassociation.com, 519-763-9431, fax 519-766-1704.





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