

# SPORTS TURF MANAGER

... for better, safer Sports Turf

JUNE 1999

## Soccer Safety •

### New Standards to Prevent Goal Tip-Over

**W**ASHINGTON, D.C. The U.S. Consumer

Product Safety Commission (CPSC) and the soccer goal industry helped develop a new safety standard that will reduce the risk of soccer goal tip-over. Since 1979, CPSC has learned of 23 deaths and 38 serious injuries from soccer goals tipping over and crushing children who climb on them or hang from the crossbar.

CPSC Chairman Ann Brown said, "We want kids to have fun, be active, and play soccer with goals that are safely anchored into the ground. The new standard makes soccer goals stable and, therefore, less likely to tip over on children."

The "Provisional Safety Standard and Performance Specification for Soccer Goals" (ASTM-PS-75-99) was approved March 2, 1999. The standard requires that movable soccer goals, except very lightweight goals, not tip over when the goal is weighted in a downward or horizontal direction. The standard also specifies warning labels that must be attached to the goal, such as: "Warning: Always anchor goal. Unsecured goal can fall over causing serious injury or death."

Most of the deaths and injuries occurred with unanchored homemade goals including those assembled by high school shop classes and community businesses. People were killed when they climbed on the soccer goal or while attempting to do chin-



ups, pulling the goal down. All goals, whether homemade or manufactured, should be properly secured to the ground to avoid injuries or deaths associated with tip-over.

There are several different ways to properly anchor soccer goals. The number and type of anchors used will depend on factors such as soil type and goal weight. Anchor types include:

- Auger-style anchors that are screwed into the ground.
- Semi-permanent anchors,

which require a permanently secured base that is buried underground combined with the use of tethers or bolts to secure the goal.

- Peg, stake, or j-hook style anchors that are driven into the ground.
- Sandbags or counterweights for indoor facilities.

CPSC developed safety guidelines for soccer organizations, schools, and recreation departments to use to help prevent tip-over of soccer goals. For a free copy of the CPSC "Guidelines for Movable Soccer Goal Safety," send a postcard to CPSC, Washington, DC 20207.

The U.S. Consumer Product Safety Commission protects the public from unreasonable risks of injury or death from 15,000 types of consumer products under the agency's jurisdiction. To report a dangerous product or a product-related injury,

#### In This Issue

2

Who is Tending the Store?

4

The President's Desk

5

The Service Department

6

Sportsfield Drainage

8

Soil Amendments

12

The Seed Label

13

The Dirt on Grubs

14

News Releases

call CPSC's hotline at (800) 638-2772 or visit CPSC's website at <http://www.cpsc.gov/talk.html>. ♦

— CPSC Press Release, May 1999

*Editor's note: Yves Fortin, Acting Chief, Consumer Products Division of the Product Safety Bureau of Health Canada, concurred with the CPSC's press release: "We are in full agreement with the content of the ASTM standards for soccer goal safety."*

# Guest Editorial

## WHO IS TENDING THE STORE?

I have become involved in the restoration of a 100 year-old building in the centre of the city in which I live. This involvement has illustrated the number of loops city officials require those involved with renovations to jump through. Permits and approvals must be obtained for structural changes, electrical changes, plumbing alterations, fire coding, fire exits, and health standards—just to name a few. All are necessary to ensure the building standards of the city are adhered to and that some unscrupulous contractor does not use faulty designs, procedures, and materials.

I have, on occasion, seen faulty designs, procedures, and materials used in the construction of sports fields. As a result the owner, and usually the taxpayer, has been saddled with extra expenses which could have been avoided if some inspection or supervision had taken place during the construction or restoration of the field.

In a recent review of a proposal for a major Ontario city, I raised the question of site supervision during a field restoration process. I was somewhat surprised to receive the response, "We do not require inspection on site." I raised the point that if the restoration was for a new changing room, most of the same group of inspectors I have dealt with on the old building restoration would have descended on the site. When asked why a sports field does not require inspection whereas a change room does, I received the response, "Buildings have provincial and federal standards which must be adhered to."

Is it not time then that we developed minimum standards for the construction of sports fields? The standards could be the first step toward minimum standards performance of the field. At the very least, we should require inspections to assure that the taxpayers' money was spent wisely.

— Dr. Bob Sheard



## ATTENTION ADVERTISERS

If you are looking for a specific market for your products, advertise in *Sports Turf Manager*. Published four times a year, this newsletter has a national and international distribution with the majority of its membership residing in Ontario. 1999 advertising rates (per issue) are as follows:

- business card size \$40.00
- 1/4 page ad \$80.00
- 1/2 page ad \$160.00
- 1/4 and 1/2 page ads are available in either a vertical or horizontal page placement.

For more information, contact Lee Huether at the STA office, (519) 763-9431, or Joy Black at New Paradigm Communications, (519) 371-6818.

- ◆ For more feature articles from the 1999 Ontario Turfgrass Symposium, please see pp. 6-11.
- ◆ For the dirt on grubs, see pg. 13.

## Weather Facts

Once in a blue moon? No, twice. A blue moon rose January 31 and again on March 31. Two blue moons in one year happens every 20 to 40 years. The last time was in 1961.

The term "blue moon" refers to the occasional occurrence of two full moons in the same month, which usually happens roughly once every 33



months. The last full moon was January 2.

The second full moon in a month is called a blue moon, regardless of tint.

"Having two full moons in two months in one year is really kind of nifty, no matter what you call them," said Jack Horkheimer of the Miami Space Transit Planetarium.

The next occurrence of two blue moons in one year will be in 2018, on January 31 and March 31, and again on the same dates in 2037.

— Associated Press, *The Record*, February 1, 1999

## SPORTS TURF MANAGER

Volume 12, Issue 2  
ISSN 1201-3765

is the official publication of the  
**SPORTS TURF ASSOCIATION  
OF ONTARIO**  
328 Victoria Road South  
Guelph, Ontario N1H 6H8  
Tel: (519) 763-9431, Fax: (519) 766-1704  
E-mail: [sta@gti.uoguelph.ca](mailto:sta@gti.uoguelph.ca)  
Website: <http://www.uoguelph.ca/GTI/guest/sta.htm>

### 1999 BOARD OF DIRECTORS

**PRESIDENT**  
Christopher Mark  
**VICE PRESIDENT**  
Jane Arnett-Rivers  
**TREASURER**  
Harold Van Gool  
**EXECUTIVE MANAGER**  
Lee Huether

### DIRECTORS

Michael Bladon, Gordon Dol, Roy Forfar,  
Andrew Gaydon, Bob Sheard, Paul Turner

### SPORTS TURF MANAGER

is published quarterly by the STA for free distribution to its membership. An annual subscription may be obtained for \$25/year.

### EDITOR

Michael Bladon  
**CONTRIBUTING EDITORS**  
Allan Gray, Bob Sheard

### PUBLISHER

New Paradigm Communications  
R.R. #8, Owen Sound, ON N4K 5W4  
Tel. (519) 371-6818, Fax: (519) 371-5789  
E-mail: [jblack@inetsonic.com](mailto:jblack@inetsonic.com)

### CANADA POST PUBLICATIONS MAIL SALES AGREEMENT No. 1461370

Postmaster: Please return undeliverable copies to the STA at 328 Victoria Rd. South, Guelph, ON N1H 6H8.

### STA OFFICE HOURS

Lee Huether is in the office from 9:00 a.m. to 2:00 p.m. Monday, Wednesday and 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.

## Snail Mail & E-Mail

### Periodicals Donation

I am writing to thank the Sports Turf Association for the donation of a variety of periodicals to the GTI Resource Centre.

The periodicals have been used to fill some of the gaps in our collection as well as to expand the titles available in the area of sports turf management. Any duplicate periodicals had articles clipped to expand the information in the subject area files we maintain in the resource centre.

The GTI Resource Centre is used by researchers, GTI staff, the OMAFRA Turfgrass Specialist, students, and members of the industry. Your contributions will assist us in providing this important service.

Thank you again for your continued support of the Guelph Turfgrass Institute.

— Rob Witherspoon, Director

### STA Grass Seed List

Every second year your newsletter puts together a list of grass seed (species and

cultivars) available for sale from the major seed companies in Ontario. I would like to commend the Association for doing this. I know that it is a lot of work, but it is a very useful piece of information. I find that I refer to it often during the year and I also send it to my clients for their use. Please keep up the good work.

— Pam Charbonneau, OMAFRA

### Maintenance Standards

I would like to ask if you have developed a sports field maintenance standards handbook similar to the ORFA Refrigeration & Ice Making Manual. I am in possession of your sports field construction and maintenance booklet. Is this your standards booklet as well? I believe if we were to meet industry standards, we would be in a more defendable and therefore marketable position.

Please update me on anything new you may have available so that we may improve our service and end product.

Keep up the great work. For an organization that started out so innocently, you have come ... kilometres! Thank you for all of your publications and information.

— Mark Fluhrer, Manager, Parks Services, City of Kingston

Editor's note: Please see the guest editorial "Who Is Tending The Store."

While standards are not available at this time, the information garnered through STA resources (print and people) will assist the athletic field manager in providing better, safer sports turf. Thanks for your kind comments.



Content deadline for the September issue of Sports Turf Manager

JULY 15, 1999



## Congratulations

### • Gordon Bruce, City of Mississauga

STA Scholarship Winner

November/December 1998 Turf Managers' Short Course

### • Howie Kumagai, City of Toronto

STA Scholarship Winner

February 1999 Turf Managers' Short Course

### PLEASE NOTE

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

## WALKER

WALKER EQUIPMENT LIMITED

Specialist in Commercial Lawn Cutting Equipment

Telephone: 905-294-8333, Fax 905-294-1702

Toll Free: 1-800-318-9428

P.O. Box 118, Markham, Ontario L3P 3J5

(Hwy. 48, 3 km N of No. 7 Hwy.)

# par ex

THE EX STANDS FOR EXCELLENCE

## Quality Fertilizer Blends for Sports Fields & Lawn Bowling Greens

### Distributed by:

Turf Care Products Canada  
200 Pony Drive  
Newmarket, Ontario  
L3Y 7B6  
905-836-0988

### Manufactured by:

Pursell Vigoro  
Canada Inc.  
22 Clarke St. East  
Tillsonburg, Ontario  
N4G 1C8

CHRISTOPHER MARK  
**The President's Desk**



**H**ello! I extend a happy spring/early summer to all members. I'm sure everyone is at their absolute busiest right now and well into their athletic field maintenance programs for 1999. I hope everything goes according to plan!

I would like to thank all members who have renewed their annual dues with the Association. We appreciate your loyalty and ongoing commitment to the STA and our mission of better, safer sports turf. If you have not yet remitted your dues, we would appreciate you doing so at your earliest convenience. Also, please take the time to review your membership data we have on file. If incorrect, please inform us to ensure our records reflect accurate members, positions, and contact information.

The Board is very busy finalizing plans for the Field Day to be held on August 18 at the GTI. Once again, I extend my sincere appreciation and thanks to our supplier members who have generously sponsored so many of the day's activities. Your assistance is invaluable. Make plans to join us on August 18 for what promises to be an exciting and informative day. Included with this issue of *Sports Turf Manager* is the Field Day brochure. With Dan Ferrone, President of the CFL Players' Association and former captain of the Toronto Argonauts, and Ken Mrock, Head Groundskeeper for the Chicago Bears, we are expecting a record attendance. Don't delay in completing the application form to ensure your registration.

In other news, a Board sub-committee is laying out the groundwork for another great sports turf component at the OTS 2000. Don't forget to include the OTS in any year 2000 educational budgets you may be preparing or providing input towards in the coming months.

Congratulations to our educational scholarship winners, Gordon Bruce from the City of Mississauga and Howie Kumagai from the City of Toronto. Both were top graduates of sports field related subjects at the University of Guelph Turf Managers' Short Course. Mr. Bruce was the Fall 1998 recipient and Mr. Kumagai was the Spring 1999 winner. We are pleased to honour both of these outstanding gentlemen. They will be invited to our Field Day to be officially recognized and introduced.

Speaking of outstanding gentlemen, I was very pleased to hear that Dr. Henry Indyk has been selected as SportsTurf's Man of the Year. Dr. Indyk has long been recognized as one of the leaders in sports field design and maintenance and has been a wonderful ambassador for sports turf. We have had the pleasure of Dr. Indyk addressing our Association at a previous Field Day and he has also been a presenter at the OTS. He has always been viewed as one of the more forward thinkers and innovators in our industry. Our congratulations to Dr. Indyk on his very deserving achievement.

I wish everyone a wonderful, safe, and pleasant summer at work and on vacation. Wishing you better, safer sports turf,  
— Christopher Mark



### STA Membership Dues



Thank-you to all members who have renewed for 1999!

If you have not already done so, please ensure you are a member in good standing by remitting your fees today. Don't forget to return your Member Information Form. The STA Membership Roster is compiled from the information entered in our database. To contact the STA, please phone (519) 763-9431, fax (519) 766-1704, email [sta@gti.uoguelph.ca](mailto:sta@gti.uoguelph.ca), or snail mail 328 Victoria Rd. S., Guelph, ON N1H 6H8.

## **DOL** TURF RESTORATION LTD.

**Gord Dol, President**  
MEMBER STA, OPA, ORFA, OGSA, CIA

6393 Hwy. 27, RR #1, Thornton, ON L0L 2N0  
Tel: (705) 458-2851  
Fax: (705) 458-2849  
Toll Free: 1-800-794-9664  
Email: [gdol@dolturfrestoration.on.ca](mailto:gdol@dolturfrestoration.on.ca)

- Tile Drainage
- Silt Drainage
- Gravel Band Drainage
- Verti Drain Deep
- Tine Aeration

- Top Dressing
- Overseeding
- Sodding
- Fine Grading

- Sports Turf Irrigation
- Sports Field & Infield Reconstruction
- Canadian Distributor of SportGrass®

**SPORTS TURF SPECIALISTS**

# The Service Department

## EQUIPMENT MAINTENANCE AND SAFETY

**T**ake pride in your equipment and tools. Keep them very sharp and balanced, well lubricated, even over lubricated if possible, and you will save power and therefore fuel. We all love to save money!

When pruning trees, shrubs, or flowers, it is quite noticeable when the proper tools are used. When they are very sharp and in good condition, the job is much easier. This is the same for turf grass equipment. A well-maintained yard, golf course, green, or ball park is a delight to see, so keep your equipment clean and sharp.

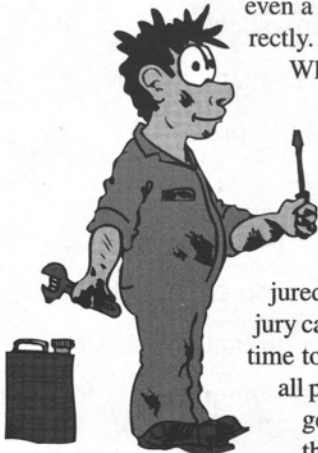
Due to humidity, rain, and plant moisture, rust will progress constantly. We can only overcome this process with thorough maintenance. Naturally, all machinery will perform much better without rust.

On the safety side, do not let anyone use a machine without proper training. Eli Luster advises reading the operator's manual before working on equipment. Procedures and performance schedules have been tested under actual operating conditions and have proven that it's worth both the time and effort needed to perform them. *If you put off reading the manual, you'll likely need it later to see what should have been done, or what must be redone.*

Use the right part. The proper type and size part and the proper hardware allow the part to do the job for which it was intended. Don't make substitutions. Hardware used in power equipment is chosen for a purpose. For example, the shear bolts (soft, break-away bolts) frequently used to attach accessories, will break away when an object becomes lodged, freeing the attachment from the gear box or drive shaft. If a hard bolt is substituted, the accessory remains attached even when an object becomes trapped, forcing the unit to continue operating and transferring the stress and damage to a more expensive part of the machine.

Little things do count. Even simple parts, like belts, must fit correctly. Contrary to popular belief, "will-fit" parts may not be the same as original equipment parts. If a belt is worn or too small, there will be belt slippage, reducing the effective operation of the machine. Worn or wrong-sized belts can cause wear that changes the physical shape of the sheave. If this occurs, even a new, properly-sized belt won't fit correctly.

While keeping your equipment in good repair, pay very close attention to the safety equipment found on all machines. Do not tie off or jump safety switches or levers. They are there to help keep operators from getting on the list of people that have been injured or even died while on the job. An injury caused by a machine usually takes a long time to heal. Make sure shields are covering all power takeoffs. They are extremely dangerous, especially when children are in the vicinity.



Remember to keep fuels properly mixed and stored in marked and clean containers. Many experienced workers have installed the wrong fuels in gas, mixed gas, or diesel engines. Check air pressure in the tires and oil in the engine.

The first thing you do when you begin your day and the last task you perform at the end of the day is to circle check your equipment. This will save you money and give you pride in your machinery. You will be pleased with the many problem-free hours you will experience due to good maintenance. Have a great summer! ♦  
— Allan Gray (with help from Eli Luster)

*Eli Luster's passages from "Equipment Maintenance for Sports Turf Managers," Turf and Landscape Press, March 1995 as reprinted in Sports Turf Topics: A Compendium of STMA Articles, 1995-1996.*



**QUALITY BENT AND BLUE GRASSES,  
PICK-UP OR DELIVERY**

17525 Jane St.  
R.R. #1 Kettleby  
Ontario L0G 1J0

Toronto (416) 364-5700  
Aurora (905) 727-2100  
Fax (905) 727-8546



**TORO®** - New & used turf equipment & irrigation products  
**PAR EX®** - Slow release professional fertilizers  
**MILORGANITE®** - Natural organic fertilizers  
**YAMAHA®** - New golf cars & utility vehicles  
**E-Z-GO®** - New golf cars & utility vehicles

**TURF CARE PRODUCTS CANADA**  
200 Pony Drive, Newmarket, Ontario L3Y 7B6  
Phone: (905) 836-0988 Fax: (905) 836-6442



Box 171  
Harriston, Ontario  
N0G 1Z0  
Phone (519) 338-3840  
Fax (519) 338-2510

**J. Robert Dippel**

**SEEDS**

# OTS Conference Highlights

Sportsfield Drainage: Learning From Mistakes (Case 2) by Dr. Bob Sheard ♦ Tired Soil: Using Inorganic Soil Amendments to Perk up Your Root Zone by Paul Grünthal

## Sportsfield Drainage: Learning from Mistakes (Case 2)

DR. BOB SHEARD, P. AG., AGRONOMIST, GUELPH TURFGRASS INSTITUTE

**A**n Ontario soccer club was successful in raising money to develop an outdoor sports facility designed to have several soccer fields. Provincial and municipal support was received contingent on the club obtaining the necessary environmental clearances and providing the city with a site development plan. A landscape architect was engaged to provide the necessary clearances and plans—plans which met with city approval. Following this initial work, few financial resources were left to develop the first field. A sketch of the soil profile and minimal directions were provided to the club by the architect.

The architect suggested removal of the surface 15 cm of topsoil, which was a clay loam, shaping the field to 2.0% grade at centre field for drainage, placing a 10 cm layer of sand over the entire field, and then replacing the topsoil (Figure 1).

During late April and early May, spring fertilization and mowing of the establishing grass were delayed due to wet conditions on the field. Any maintenance operations which were attempted resulted in severe rutting by the tractor. Later in July and August, the field became very dry and hard as no irrigation was available and the grass was in poor condition. Turf outside the field, however, remained in relatively good condition as rather timely rains were experienced throughout the area.

Coring revealed the subgrade below the sand layer was not penetrable with a hand soil probe.

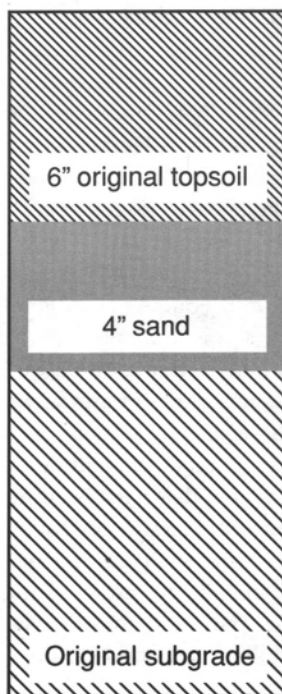
### What Went Wrong?

There were two major errors in design and construction. The major problem was the sand layer below the topsoil which created two zones of pore size discontinuity. The first zone was between the subgrade and the sand layer. At the interface of the subgrade and the sand there is a change from relatively large pores in the sand to very small pores in the subgrade. As often happens in sports field construction, the earth moving was done in the fall under wet conditions with large-size, earth moving machinery. This operation resulted in a compacted subgrade with further reduction in porosity through which one would expect a very low rate of water movement. Thus, winter snows and spring rains would keep the sand layer saturated for a long time in the spring. In turn, the water in the saturated sand layer would rise into the topsoil by capillary action, keeping the surface soft and resulting in the observed rutting by the tractors.

The second zone of pore size discontinuity occurred at the

interface between the sand layer and the topsoil. Here the discontinuity is in the reverse direction where relatively fine pores in the topsoil overlay large pores in the sand. Initially in the spring, drying out would be delayed because a perched water table would develop in the topsoil at this interface, adding to the wetness of the surface. When the system finally dried out during midsummer, capillary flow of water from the subgrade upwards through the sand to the topsoil would be interrupted resulting in the turf having to rely only on the available water stored in the 15 cm of topsoil.

The second error in the design was the use of an excessive crown as a substitute for drainage. Although a 2.0% grade would effectively shed most of the water if the field were a bare parking lot, a dense turf, the prime prerequisite of a good soccer field, is the best system known to soil conservationists to prevent run-off. If run-off is prevented through the turf cover, the water which falls on the surface must infiltrate the soil surface and be removed by natural or artificial internal drainage systems. While a crown may be of value in a parking lot, it adds little to the drainage of a sports field.



**Figure 1: A schematic drawing of the soil profile of the soccer field.**

The architect suggested removal of the surface 15 cm of topsoil, which was a clay loam, shaping the field to 2.0% grade at centre field for drainage, placing a 10 cm layer of sand over the entire field, and then replacing the topsoil. So, what went wrong?

### Fixing the Problem

The solution to their problem is expensive. The sand layer must be removed. To do so requires that the topsoil be carefully stripped from the field and stock piled before the sand is removed and discarded. Some intermixing of the soil and sand is unavoidable where the stripping is done with large equipment.

The question is asked: "Why not mix the sand and soil together"?

There is a grave danger in mixing the topsoil and sand together in that the resulting mix will be very highly compactable and the field will have very poor water transmission characteristics. It is also very difficult to obtain a good blend of soil and sand unless the material is passed over a power screen and the

moisture content of the materials during screening is appropriate to allow good fragmentation of the structure of the topsoil. Satisfactory mixing cannot be achieved with a rotovator or by deep cultivation.

When designing a soccer field, it is best to stay with the soils which were left there by nature unless you understand the physics of water flow in soil. As with any major surgery, it is advisable to get a second opinion. ♦

"When you come to the end of your rope,  
tie a knot, and hang on."  
— Franklin D. Roosevelt



EQUIPMENT LTD.

**Paul Turner**

*Sales Representative*

Cellular: (416) 566-0211 Pager: (416) 547-0148

1184 PLAINS ROAD EAST, BURLINGTON, ON L7S 1W6  
Burlington (905) 637-5216 Toronto (905) 338-2404  
1-800-883-0761 Fax: (905) 637-2009



**Brian Rosenberg**

*Technical Sales Representative*

Tel: 1-800-461-6471

Cell: 519-581-2636

Fax: 1-800-305-0914

E-mail: brianr@nu-gro.ca

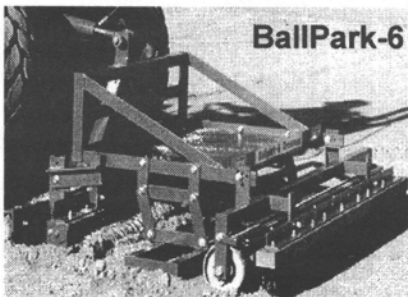
**Nu-Gro Professional**

2270 Speers Road

Oakville, ON L6L 2X8

Product Info Line: 1-800-268-2806

## We've heard a Rumour ... You're about to buy a Groomer!



**BallPark-6**

### BallPark-6 Groomer

The **BallPark-6** is the original groomer. It combines five essential and individually adjustable grooming tools as illustrated. Hundreds of ball diamonds in North America are now being groomed regularly with the **BallPark-6**.

Options available for both models include:

50 Gallon Water Spray Tank, Extension Wing Brush Kit, & Hydraulic Top Link.



**Diamond Master**

### Diamond Master

The **Diamond Master** carries the same tools, does the same job, but we've made it much easier. Individual tool adjustments can now be made with simple screw jacks.

That's a big help when you have 5 to 20 diamonds to do in a hurry.

# BANNERMAN

The home of  
Sportsturf Magic

41 Kelfield Street ~ Rexdale, Ontario ~ M9W 5A3  
CDN 1-800-325-4871 • USA 1-800-665-2696

# Tired Soil: Using Inorganic Soil Amendments to Perk up Your Root Zone

PAUL GRÜNTAL, M.Sc., EPI

Poor growing conditions are often the result of problem root zones. Compaction, lack of structure, or inadequate porosity are just a few of the stresses that can reduce the productivity of your soil. Landscapers, sports turf superintendents, and nursery owners are constantly striving to find solutions for stressed, tired, and compacted root zones. Soil amendments are proving to be invaluable tools for enhancing some of the most common soil problems.

## Compaction

Mechanical forces from cultivation or heavy traffic move soil particles closer together. Compaction destroys natural soil structure, increases the bulk density of the material, as well as creates numerous other problems. As more force is added, the number of larger pores begins to decrease and the movement of air and water is restricted. This is especially true for fine textured soils—soils with a high percentage of clay and silt-sized particles.

The inherent properties of some soils may make them more vulnerable to compaction. Soil, water content, type and amount of clay or organic matter, and particle-size distribution can all determine the susceptibility of soil to compactive forces. Severe compaction leads to poor drainage, lack of soil aeration, and restricted root growth. Therefore, it is important to understand how you can manage the forces on top of your soil and the physical properties in your soil.

## The Need for Structure

Soil structure also influences the movement of water and air in the soil. The term soil structure refers to how primary soil particles (sand, silt, and clay) are arranged into aggregates. Plant roots, wetting/drying, or freezing/thawing cycles move primary particles closer together. Sticky residues from microbes, organic matter, iron oxide, and clay then act as cementing agents and hold the particles in place. The amounts and types of binding agents will determine the stability of the aggregate.

Clearly a soil with a well developed crumb-like aggregate structure will contain a lot of large pores creating the best pathways for exchanging gases, moving moisture, and growing roots. A soil with an abundance of large pore spaces will also occupy a large volume and hence have a lower bulk density when compared to a poorly structured soil of the same type.

## Problems with Porosity

Adequate pore space is essential to a healthy soil environment. Air and water move through the root zone via spaces between solid soil particles and soil aggregates. Porosity is vital for plant transpiration, nutrient uptake, and root movement. However, knowing the total porosity of your soil is not as important as knowing the ratio of pore sizes. Pore space in the soil is generally divided into larger and smaller pores.

Larger pores are vital to drainage and remove excess water from the soil to allow aeration of plant roots. For this reason, large pore space is often referred to as aeration porosity. Smaller pores hold water needed for plant growth. Water in smaller pores cannot be drained by gravity, but is slowly taken up by plants along with nutrients. Networks of tiny pores can move water upward like the wicking effect of small tubes. This characteristic gives this void space its name, capillary porosity. However, there are limits. Very tiny pores may hold water so tightly that they are unavailable for plant use.

Preferred ratios of air and water filled pore space vary with the application of the growing media (Figure 1). Generally, the total porosity should occupy about 50% of the volume of the root zone. The remaining volume consists of solid mineral and organic materials. Several analytical methods can be used to measure the relative ratios of pore space in soil. However, most techniques require the use of suction or tension apparatus to draw water from the soil. Laboratories or universities specializing in soil analysis can usually provide this service.

## Uses for Amendments

Poor soil fertility can be corrected easily using fertilizers or organic amendments. Nutrients are added when needed. However, without the right soil composition, those nutrients may not be enough to satisfy all of the plant's needs. A good root zone will provide physical properties necessary to optimize all the constituents required for growth.

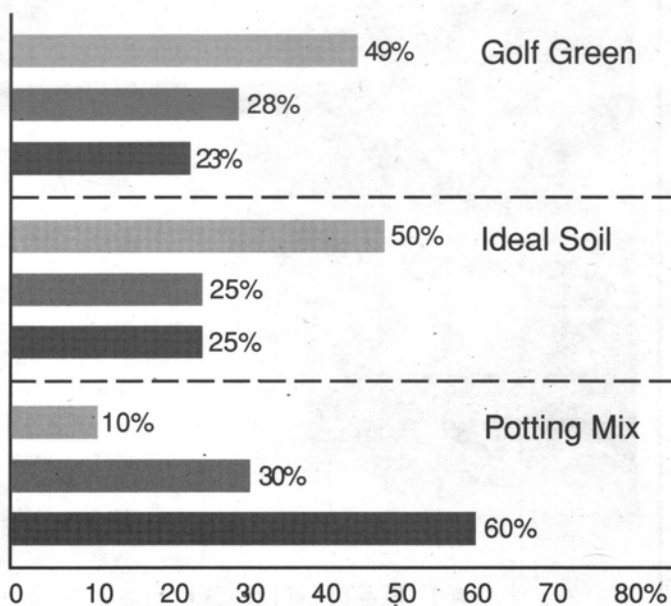


Figure 1: Preferred ratios of air and water filled pore space. ■ water ■ air ■ solids



Generally, soil amendments are used to improve plant growth by enhancing the physical characteristics of the root zone. Superior drainage, better gas exchange, and increased tilth optimize access and use of soil nutrients by plants. Continuing interest in the management of problem soils has led to the commercialization of numerous products. Amendments can be split into three categories: organic supplements, soil conditioners, and inorganic amendments.

Organic amendments from plants or animals are the most commonly used. They supply nutrients to the soil, aid soil structure, and are often considered a hybrid between a fertilizer and a soil amendment. Most people have used organic supplements such as manure or compost. However, waste-based supplements from food and industrial processors are receiving more attention. Now your plants can dine on grain by-products, crab and fish meal, and beer residue.

Synthetic materials and starches are often referred to as soil conditioners. They can be designed to increase water absorption, stabilize soil aggregates, and control erosion. Conditioners such as surfactants, polysaccharides, and humic derivatives are all useful tools to the horticulturist.

Typically, the third category consists of inert granular material. Sand, heat-treated minerals, plastics, and rubber are designed to influence soil texture and improve its physical characteristics. Inorganic amendments can reduce the bulk density, break-up heavy soils, and enhance the number of large pores in the soil.

### Choosing your Amendment

The main objective of most coarse inorganic amendments is to create more pores. Increasing the amount of large pores will promote drainage and aeration, while enhancing the soil's capillary porosity will aid water retention. Some soil amendments also have a high cation exchange capacity (CEC) which can help prevent nutrients from being leached out of the root zone.

Some experts believe the choice of soil amendment should be based on its ability to improve soil aggregation and structure.

Table 1: Common Amendment Properties

Amendment	Bulk Density (g/ccm)	pH	CEC
Sand	1.45 - 1.70	4.5 - 8.5	Low
Vermiculite	0.07 - 0.12		High
Perlite	0.10 - 0.14	7.0 - 7.5	Low
Calcined Clay	0.60 - 0.80	6.0 - 8.0	Low-medium
Diatomite	0.39 - 0.70	7	Low-medium
Zeolite	0.48 - 0.85	8	Medium-high
Expanded Shale	0.80 - 0.95	6.8 - 9.5	Low
Pumice	0.09 - 0.20	7.0 - 7.4	Low
Slag	0.70 - 0.80	High	Low
Crumb Rubber	0.44 - 0.46	6.7 - 6.9	Low
Polystyrene	0.02 - 0.03	7	Low

Others debate that the most important characteristics of coarse amendments are their particle size, uniformity of particle size, and durability. Another view is that the most efficient amendment is the material that can provide the greatest improvement of soil characteristics per unit volume or weight. However, some amendments are more effective for enhancing one particular property. The amount of supplement added also depends on the texture and relative state of the soil you are amending.

In short, there is no cure-all amendment. However, there are a number of factors to take into consideration before buying an amendment. Below are a few areas to examine when purchasing a soil amendment:

#### Stability

Is the material physically, chemically, and biologically stable?

Materials that breakdown or change shape due to compaction or weathering may slowly lose their ability to enhance the soil's physical conditions.

#### Consistency

Is the product of consistent quality?

Uniformity from batch to batch provides you with assurance that you will get the desired result when applying the amendment at the manufacturer's suggested rate.



*Red and grey clay products designed for baseball, cricket and tennis, along with groundskeeping tools and accessories.*

### MAR-CO CLAY PRODUCTS INC.

Box 67, Hwy. 86, Wallenstein, ON N0B 2S0  
Tel. 519-669-3657 Fax: 519-669-8799

### PICKSEED®

*good things growing ...*

PICKSEED Canada Inc.  
Box 304

Lindsay, ON K9V 4S3

**1-800-661-4769**

FAX (705) 878-9249

#### Charlie Pick

Lindsay, ON  
Car: 705-878-7604

#### Doug MacMillan

Lindsay, ON  
Car: 705-328-6663

#### Larry White

London, ON  
Car: 519-649-8777

## **Suitability**

Is the supplement physically and chemically suitable for your needs?

A material that is difficult to handle, hard to mix, has an unacceptable pH or CEC may lead to unanticipated problems.

## **Viability**

Is the material readily and economically available?

The product should be easy to obtain and relatively inexpensive. When examining costs remember to amortize the benefits of the product over its estimated life span. Unlike fertilizers, inorganic amendments are designed for the long-term.

## **Amendments**

More and more amendments are being introduced into the marketplace under various trade names. Manufacturers use different processes, feedstocks, and quality control methods to produce their materials. Variability in production along with a wide range of products can make choosing an amendment a difficult task. If you are unsure about a certain product ask the manufacturer for more information, talk to colleagues who have used the material, or consult an expert. Table 1 outlines some of the properties of common inorganic amendments.

## **Sand**

Sand is the most commonly used amendment. It is available from a wide variety of sources, obtainable in many grades, and is inexpensive. Coarse, well-graded quartz sand with the proper pH and few weatherable impurities is preferred because it is chemically stable and highly resistant to physical weathering. The high bulk density of sand makes it ideal for adding weight to soil-less mixes. Sands also enhance air porosity and water movement, but decrease water retention. Their effectiveness is largely dependent on their particle size distribution and sometimes large quantities must be used to achieve the desired effect.

## **Processed Mica**

Vermiculite is a layered mineral that is crushed and graded before it is heated to expand (exfoliate) the particles. Exfoliated vermiculite has a very high water holding capacity. In fine-textured soils this amendment can enhance water movement and air porosity, however, in coarser mediums vermiculite can have the opposite effects. It is a major constituent in most soil-less mixes because it has a high CEC, contains potassium and magnesium, and aids rewetting. Vermiculite is extremely vulnerable to collapse from compactive forces and will break down when mixed wet.

## **Perlite**

Perlite is a porous, lightweight, siliceous material produced by quickly heating obsidian-like volcanic rock. It is chemically inert and resistant to weathering. However, perlite is also brittle and can be crushed by compactive forces. Its low bulk density makes it useful for reducing the weight of container mixes, such as those used for roof top gardens, but particles often float to the surface upon irrigation. Fine grades can effectively increase to-

tal porosity and water retention in soil. A coarser material can improve aeration porosity but is not thought to be as effective as other amendments in increasing permeability in fine-textured soils.

## **Calcined Clay**

Heating (calcining) clay minerals such as montmorillonite and attapulgite to extremely high temperatures creates these porous ceramics. Calcined clays are available in a variety of grades and are used frequently as industrial absorbents and cat litter. Coarse grades are suitable for renovation work or potting soils while finer materials are generally used for top-dressing turfgrass. Calcined clays can increase aeration and drainage in finer soils, but these benefits may be reversed when added to some sands. They are extremely porous and can hold large volumes of water. Unfortunately, materials with a high percentage of very small pores hold water so tightly it may not be available for plant growth.

## **Diatomite**

This amendment is made by calcining diatomaceous earth, a silica-based mineral derived from the skeletons of diatoms (microscopic algae). The lightweight granules are stable and relatively inert. This amendment is available in a number of particle sizes and shapes. Fine materials are designed for topdressing turf while coarser particles are more suitable for landscaping or speciality mixes (i.e. orchid and bonsai). Diatomite is effective in increasing aeration porosity and drainage in fine soils and improves capillary porosity in coarser root zones. Similar to calcined clay, however, if the majority of pores are very fine then not all of the water held will be available to plants.

## **Zeolite**

Clinoptilolite zeolite is a naturally occurring aluminosilicate mineral. It has a porous crystalline structure that helps to retain plant available water, reducing water consumption. Well-graded material can also aid drainage. Zeolite has a high CEC, which increases nutrient retention within the soil and can reduce leaching of potassium and ammonium. Nitrogen is more efficiently used by plants because zeolite reduces ammonium conversion into the more leachable nitrate form. The most desirable zeolites are those that are derived from deposits low in sodium.

## **Expanded Shales**

Heating shale to extremely high temperatures produces crystallized, expanded particles. When properly graded, these particles can increase soil aeration and infiltration. Shales can also have a high CEC and provide some nutrients. Their high pH should be considered when using large quantities of material.

## **Pumice**

Pumice is a siliceous and remarkably porous volcanic rock. Fine grades increase water retention in fine-textured soil while coarser materials enhance both total porosity and air porosity. Pumice can enhance permeability and its amendment characteristics have been compared to those of perlite.

## Slag

Blast furnace slag is a by-product from the steel-making industry. Porous aggregates are created when the material is rapidly cooled with water. Slag can increase air porosity and water movement in the soil. However, the material often has a high pH and brittle particles can be broken down in high traffic areas.

## Crumb Rubber

Crumb rubber is a secondary resource recycled from scrap automobile tires. This amendment contains graded rubber granules and sometimes additional components, such as compost or mineral materials.

While crumb rubber is not truly inorganic, it behaves much in the same way. Coarse grade rubber crumb amendments reduce compaction stress in soil, increase total porosity, and enhance water movement. Finer particle sizes are being used for topdressing and can protect the crown tissue of plants from abrasion.

## Polystyrene

This inert material is a by-product of polystyrene processing. Beads or flakes of polystyrene can reduce the bulk density of root zones and increase aeration and drainage. However, like perlite it tends to separate from the mix and rise to the surface during irrigation. ♦

— reprinted from *Landscape Trades*, April 1998, Vol. 20, No. 3

## In Memory of Bill Carnochan

It is with great sadness that we advise the passing of William (Bill) Carnochan of R.R. #4, Seaforth on February 14, 1999, following a courageous fight with cancer.

Bill has been a valued member of the Oseco team since 1983. Bill's strong work ethic, professionalism, and positive attitude inspired us all. We at Oseco were honoured to have known Bill and to have counted him as both a friend and colleague. Bill will be dearly missed by all who knew him.

Bill is survived by his wife Sharon and four children, Robyn, Jill, Jared, and Kate.

Memorial tributes to the Brain Tumor Foundation, the Canadian Cancer Society, or a charity of your choice are appreciated. A Bill Carnochan Memorial Trust Fund is being set-up by the Carnochan family to be used within the community for scholarships and awards. If you wish further details, please contact the Carnochan family.

— Paul Eros, OSECO INC.

*Editor's Note: The STA again extends condolences to Bill's family and friends. He was not only an excellent salesman and highly respected in the industry, but a kind friend.*

## Ransomes® AR 250 Sports Field Rotary Mower



FOR A FREE DEMO, PLEASE CALL:



1184 Plains Road East  
Burlington, Ontario L7S 1W6

Toronto Area: (905) 338-2404  
Burlington Area: (905) 637-5216  
All Other Ontario Areas: (800) 883-0761  
Fax: (905) 637-2009

The AR 250 is Ransomes' answer to cutting sports fields versus conventional mowers. The double-bladed 5-Gang rotary mulching decks allow an extremely fine finish without the costly repairs associated with adjusting reels to bedknife, backlapping and reel sharpening.

### ALL OUT-FRONT CUTTING DECKS.

- 98" cutting width
- Hydrostatic power steering
- 7.5 mph cutting speed
- 38-hp Kubota liquid-cooled diesel engine
- Parallel Series 4-wheel drive system
- Five fully floating cutting decks
- 4" rear roller minimizes scalping
- Cutting heights from 3/4" to 5 1/4"
- Rear roller provides attractive striping effect
- No tools needed to change height of cut

# The Seed Label

SUMMARIZED BY MICHAEL BLADON

**D**o you understand how to interpret a seed label? International seed laws are a tangle of rules and regulations which present some real challenges for the seed grower and the seedsman. The seed trade in Canada is governed by the Seeds Act which provides consistent legislation across the country. In the U.S.A., each state sets its own seed laws and standards.

If we examine Canadian seed law, specifically as it relates to turf and revegetation species, we can obtain a good idea of how the legislation affects both the producer and the consumer. Canadian seed laws can be divided into two categories: one relating to the agronomic performance of varieties of species, the other relating to the mechanical and genetic purity of the seed. The Seeds Act requires that before offering for sale, the variety being offered must have been granted a license. Licensing is the responsibility of Agriculture Canada. The determination to give a license is based on several criteria. Most important is the way the grass performs in relation to those varieties already licensed. Another is how much seed is available. In this way, a well designed licensing system gives the purchaser ample protection and emphasizes continual improvement in the production of new varieties.

The other major area of seed law is in the regulation of the quality of seed offered for sale. In Canada, all seed put up for sale must be labelled and meet the grades set out in the tables of the Seeds Act. Seed which does not conform to these standards is ranked as "rejected." It is illegal to sell "rejected" seed in Canada. Thus our seed laws perform the role of "quality control" which ensures that the seed meets the grade stated on the label. The three grades outlined by the Seeds Act are Canada No. 1, 2, and 3. Canada No. 1 is asked for most commonly. Grades differ in the allowable percentages of weed seeds, other crop seeds, and germinations.

Labelling the genetic or pedigree class of the seed is also controlled. Only pedigreed seed, which, when speaking of seed of commerce, is "certified," assures the buyer that he gets the variety purchased. In Canada, practically all seed has to be pedigreed if it is identified by a varietal name. The certified label is universally coloured blue, so the terms "certified" or "bluetag" are the same. The label will read Canada No. 1 Certified only if all seed in the container is of one cultivar (e. g. Baron, Midnight, Touchdown).

Quality conscious seed buyers should recognize that the Seeds Act is based on minimum germination and maximum weed contents. If the germination meets a stated minimum and the weed and other crop content does not exceed certain maximums, then the seed is labelled within its grade. Therefore, great variations can exist within the grade No. 1 seed. There could easily exist a 15% difference in germination and an even more dramatic difference in weed seed and other crop seed content. For instance, a farmer who bought red clover would not object to that clover seed containing 0.5% alfalfa seed. But a sod grower buying Kentucky bluegrass would complain about 3% annual bluegrass or

bentgrass in his seed as it would create a serious problem in his crop. If you wish to verify the quality of a particular seed purchase, the seller maintains records for each lot and both independent and government laboratories will perform this service.

Canadian seed laws, as in most countries, work well to protect the purchaser and the seller. They guarantee the adequacy of the seed to establish a crop under most conditions. They assure seed that is healthy, free of disease, and adaptable for the required climate, area, and purpose. Lastly, they provide for orderly marketing and distribution of the product.

The seed label does not provide information on the size of seed of the different kinds that are included in the mixture. Not all seed are the same size and so a mixture may contain a relatively small percentage by weight of a small sized seed but this would amount to a large percentage on the basis of numbers of seed.

## Seeds per Pound of Common Turfgrasses

Turfgrass	Seeds per Pound
Colonial bentgrass	6,200,000
Kentucky bluegrass	1,300,000
Turf-type perennial ryegrass	350,000
Turf-type tall fescues	230,000

As well, seed size is related to seeding rate. Roughly 10 to 15 seed are needed per square inch. While this seems like quite a bit, it takes this much in the establishment process to protect the soil and create the most desirable microclimate for seedling establishment. On average, a fine sports field will have close to five mature plants per square inch.

## References

- Pickscene, January/February 1984. Seed Legislation and How To Read a Seed Label.
- Roberts, Eliot. C. The Lawn Institute 1991-92. The Seed Label (Topic sheets). ♦

## CERTIFIED SEED



Mustang  
Tall Fescue  
L11-1-MUS28  
922062879

MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

# Resources: The Dirt on Grubs

EXCERPTS FROM THE OMAFRA FACTSHEET



**G**rubs, the term given to the larvae of scarab beetles, are frequently found feeding on the roots of turf and pasture grasses. Damage caused by white grubs initially resembles drought stress. As grub feeding continues, areas of fresh turf begin to wilt and turn brown. In areas where their numbers exceed five to 10 per one-tenth of a square metre (1 sq. ft.), dead patches of turf will result.

Turf that has been damaged by white grubs will lift away from the soil easily because the roots have been eaten and they no longer anchor the turf to the soil. Often, skunks and other small mammals will pull back the turf in search of a meal of grubs. The damage is usually more extensive than that caused by the grubs, but can be repaired by replacing the sod, tamping or rolling the surface, and watering the area.

In parts of Ontario, there are three species of white grubs which infest lawns—European chafer, June beetle, and Japanese beetle. The most common species is the European chafer which has come from Europe and has invaded much of the southern portion of the province. It occurs along Lake Erie and has spread to areas north of London and Kitchener and east of Toronto. Another species, also imported, is the Japanese beetle and it has become established in some areas of the Niagara Peninsula and the Hamilton-Wentworth region. Grubs of both species cause considerable damage to turfgrass, while the Japanese beetle adult is a serious pest of a large number of fruit and ornamental trees and shrubs. June beetles are native to North America, with ap-

proximately 152 species occurring in the United States and Canada. In Ontario, there are three principal species.

Grubs of all species have soft, white, C-shaped bodies with tan or brown heads and six prominent spiny legs. They are quite small when first hatched (3-4 mm long), but at maturity, they can reach a length ranging from 2 cm for a Japanese beetle larvae to 4 cm for the June beetle grub. A healthy grub is milky white in colour, with the dark contents of its gut showing prominently through the cuticle at the hind end of the abdomen. A distinguishing feature among all three species is the pattern of spines occurring on the underside of the tip of the abdomen.

For more information on life history, cultural control, monitoring, and chemical management, access OMAFRA's FACTSHEET *Grubs in Lawns* on the internet at <http://www.gov.on.ca/OMAFRA/english/crops/facts/97-023.html> or telephone 1-888-466-2372 and request order #97-023. You might also check out OMAFRA's Turf Hotline at 1-888-290-4441, which is updated weekly on Friday mornings. ♦

"My grandfather once told me there are two kinds of people: those who do the work and those who take the credit. He told me to try to be in the first group, there was less competition there."

— Indira Gandhi

AERATE 66,000 SQUARE FEET PER HOUR  
WITH THE JRCO AERATOR



The JRCO aerator fits commercial walk behind and riding mowers. The 38-inch-wide unit can aerate 66,000 square feet per hour at 5 mph. Aeration holes are up to 3 inches deep, and the unit dispenses loose plugs of soil, not hard core plugs. There is no subsurface compaction around or at the bottom of the holes, which promotes water and air filtration. Video available showing this and other mower attachments.

**Rittenhouse**  
SPRAYERS  
est. 1914

R.R. #3, 1402 Fourth Avenue,  
St. Catharines, Ontario,  
Canada, L2R 6P9

Toll Free: 1-800-461-1041  
Phone: (905) 684-8122  
Fax: (905) 684-1382

E-mail: [sales@mkrittenhouse.com](mailto:sales@mkrittenhouse.com)  
Website: [www.mkrittenhouse.com](http://www.mkrittenhouse.com)



Call for for a  
free copy of our  
**1999**  
**BUYERS**  
**GUIDE**

**RSI** Rothwell  
**SEEDS**  
international

1-888-768-4935



Suppliers of quality  
turfgrass varieties  
and mixtures.

[www.rothwellseeds.com](http://www.rothwellseeds.com)

In Western Ontario Call:

**Chris Meier**  
519-357-6583

In Eastern Ontario Call:

**John Konecny**  
705-878-6153

**Imagine**  
PERENNIAL RYEGRASS

Peter Coon - Central Ontario  
Chris Meier - West Ontario  
Victor Freiberg - East Ontario  
Chuck Demers - North Ontario



**Oreco** INC. "The turfseed specialists"

210 Wanless Dr., Brampton, Ontario L6V 1A1  
Phone 905-846-5080 or 1-800-668-5080  
Fax 905-846-6909

# News Releases

## SportGrass®: Sports Turf for the New Millennium

**D**ol Turf Restoration Ltd. is pleased to announce that they have recently become the Canadian supplier and distributor for SportGrass®. SportGrass is ideal for almost any athletic field. It is the first turf product to combine the toughness and wear resistance of synthetic turf with the playability of natural grass.

The SportGrass system consists of a 100% natural grass playing surface grown in a layer of amended sand. Within the layer of sand are polypropylene grass blades tufted into a woven backing. Because the roots of the grass grow down through the synthetic blades and woven backing, the crown and root system of the plant are protected.

Even during heavy play, SportGrass maintains a consistent and level playing field. The synthetic blades and woven backing form a matrix with the root system of the natural grass. If the natural grass blades are temporarily worn away, the stability of the field is retained, and play can continue.

SportGrass can be installed in any climate with any type of grass, from bent to Bermuda. When properly maintained, SportGrass should last considerably longer than synthetic turf playing surfaces.

SportGrass is truly a breakthrough in athletic field surfacing. Never before has one product been able to combine the playability of natural grass with the durability of synthetic turf.

For more information, call Dol Turf Restoration at 1-800-794-9664.

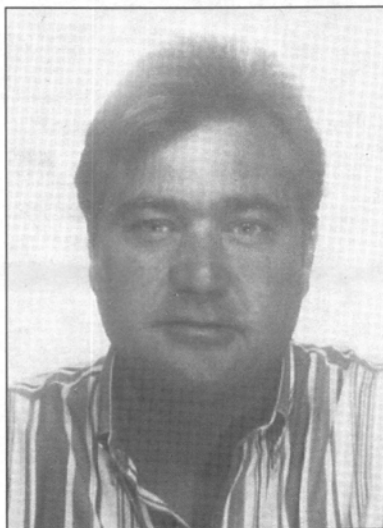
## New Addition to the Dol Turf Specialists Team

**D**ol Turf Restoration Ltd. is pleased to announce the appointment of Kerry Carrothers to our team of Sports Turf Specialists. Kerry, formerly of Hutcheson Sand and Mixes, brings 10 years of turf related sales experience with him.

We are a company committed to providing the best sports fields possible. Our list of services include topdressing, overseeding, aeration, fertilizing, sports field construction and reconstruction, as well as the installation of tile drainage and SportGrass®.

We also provide a sports field consulting service which includes safety audits, risk management, soil analysis, and recommendations to establish economical and effective turf programs.

Kerry would be happy to provide you with information regarding any of our products or services. He can be reached at 1-800-794-9664 or on his mobile at 416-717-4221.



## Did You Know?

- ◆ Southwestern Ontario has the greatest frequency of tornadoes in Canada.
- ◆ The warmest year on record for most of Canada was 1987.

# turf

Win the war  
against pests  
and nutrient  
deficiencies.

Ask us for a

# complete solution

to all your  
turf care needs.

Doccoril 2787 Rovral Green Trillion 3-Way Herbicide Dursban Turf Diazinon 500EC & 5G Expedite lance L  
Diazinon 500EC & 5G Expedite lance Dimension Terrano SP Quintozene 75WP Turf Pride™ Granular Fertilize  
75WP Turf Pride™ Granular Fertilizers Plant - Prod® Soluble Fertilizers Turf Mark Turface Mound Master Prof

## PLANT PRODUCTS turf

Plant Products Co. Ltd., 314 Orenda Rd., Brampton ON  
L6T 1G1 (905) 793-7000, 800-387-2449,  
Fax (905) 793-9157

# In Memory of Neil Campbell: 1931-1999

**N**eil Campbell passed away on Sunday, January 10th at the Kitchener-Waterloo Health Centre in his 69th year. Neil was diagnosed with lung cancer only six weeks prior. He leaves Eleanor, his wife of 45 years, son David, and daughter Gayle. Neil was predeceased by another daughter Jane in 1981.

Neil worked with the City of Kitchener for 25 years as a Horticulturist and more recently as Manager of Horticulture. He made many contributions to Kitchener with his work in Victoria Park, where he designed many of the floral displays and tree plantings.

Kitchener Parks and Recreation has a horticultural training program based on the Ontario Diploma in Horticulture Extension Education Program at the University of Guelph. This program was Neil's idea and it was incorporated into the Union Job Classification System and the collective agreements. Neil was awarded a

Life Membership from the ODH in Guelph for his contributions in education as his idea has spread through many other categories including cemeteries, golf maintenance, and arenas, as well as through other communities.

Neil had an extensive knowledge of turf maintenance from his work and experience with Ruthven Sod and knew his equipment well. He oversaw an excellent sports field program from that experience.

Neil Campbell could be put in the *most memorable* of people category. His interest in and visit to the Isle of Man to watch motorcycle races, for example, illustrated his passion for life. After he retired, he drove Yonge Street in Toronto (called the longest street in the world) to Rainy River where he had lunch with the mayor. During a fly-in fishing expedition north of Sudbury on a lake with only one other camp, Neil pulled from his tackle box a book of poems by Robert Service and we read poetry around the campfire for sev-

eral evenings. Neil was a master of quips and one-liners. He had a great sense of humour and was quick with his wit amusing many around him.

Neil will not be easily forgotten as he made a significant impact on Kitchener's Parks and in particular Victoria Park where another chapter in the park's rich history is now complete. An oak tree was planted in Victoria Park on May 7th in Neil's memory.

We appreciate Neil's contributions—he truly made a difference. ♦

— Tom Clancy, Kitchener  
Parks & Recreation

*Editor's Note: Neil was an originating member and long-time friend of the Sports Turf Association. He hosted our field day in 1990, attended STA sessions at the OTS, and was committed to athletic field maintenance in the City of Kitchener. We extend our condolences to Neil's family and friends.*



## Vanden Bussche Irrigation & Equipment Limited

*Irrigation Specialists for  
More Than 45 Years*

R.R. #4, Milton, ON L9T 2X8

Metro Toronto: (416) 798-4745

Milton: (905) 875-4545 or 1-800-263-4112

Fax: (905) 878-4501

*Distributors and designers of sprinkler systems to the turf grass industry and the Ontario distributor of Rain Bird products.*

Call us. We can meet your irrigation needs.

**RAIN BIRD**  
PREFERRED BY PROFESSIONALS WORLDWIDE®

## ATHLETIC FIELD COVERS

## TURF GROWTH BLANKETS

## Baseball/Football WALL & RAIL PADDING

*Everything you need to protect natural turf,  
avoid rainouts or safeguard against player injury.*



For complete information, please call  
**1-800-387-5808**

**COVERMASTER™**  
**COVERMASTER**  
**COVERMASTER**  
MASTERS IN THE ART OF SPORTS SURFACE COVERS



**VISIT OUR WEBSITE!**  
WEB: [www.covermaster.net](http://www.covermaster.net)  
E-MAIL: [info@covermaster.net](mailto:info@covermaster.net)

COVERMASTER INC., 100 WESTMORE DR. 11-D, REXDALE, ON, M9V 5C3  
TEL 416-745-1811 FAX 416-74-COVER (742-6837)

## INDUSTRY NEWS

### **Turf Care Lands Rothwell Distribution**

Turf Care Products Canada has been appointed the eastern Canadian turfgrass seed distributor for Rothwell Seeds International of Lindsay, Ontario.

"RSI believes that it can provide better customer service through Turf Care by utilizing their sales representatives and branch offices throughout eastern Canada," a Rothwell-issued news release stated.

Rothwell Seeds is the exclusive distributor in Canada of L-93 bentgrass. Turf Care operates offices in Ontario in London, Newmarket, and Ottawa, in Québec in Pointe Claire, and in New Brunswick in Saint John.

RSI is a partner company of AgriBioTech Inc., a North American turfgrass and forage seed company. Other partner companies include Lofts, Olsen-Fennell, Fine Lawn Research, Green Seed Co., Oseco, Willamette, and Zajac Performance Seeds.



### **Vanden Bussche Makes It A Clean Sweep**

Vanden Bussche Irrigation and Equipment Ltd., golf sales division based in Milton, Ontario, has been named Rain Bird "International Golf Distributor of the Year" for 1998. This award is presented in recognition of outstanding sales growth and customer service.

This award follows two previous honours for Vanden Bussche for Ag Distributor and Turf Distributor, making it a clean sweep for 1998.

The Golf Distributor of the Year Award was presented (recently) in Orlando during the GCSAA trade show and conference. Company vice-president Marc Vanden Bussche credited his Milton, Ontario staff for their outstanding efforts during 1998.

Vanden Bussche Irrigation has been selling Rain Bird golf products since 1994.

— *TURF & Recreation, Volume 12, Number 2, 1999*

**RAIN BIRD**  
PREFERRED BY PROFESSIONALS WORLDWIDE®

## Coming Events

### **July 13 or 14**

Microscopic Diagnosis of Turf Diseases Workshop, University of Guelph  
Contact: Pam Charbonneau, Tel. (519) 824-4120 Ext. 2597

### **August 17**

OTRF Fundraising Golf Tournament, Devil's Paintbrush Golf Course  
Contact: Tel. (519) 824-4120 Ext. 2449

### **August 18**

Sports Turf Association 12th Annual Field Day, Guelph Turfgrass Institute  
Guelph, Contact: Lee Huether, Tel. (519) 763-9431

### **August 31**

Turfgrass Research Field Day, Guelph Turfgrass Institute  
Guelph, Contact: (519) 767-5009

### **September 16-18**

Communities in Bloom National Award Ceremonies and Symposium on  
Parks & Grounds, Halifax, NS  
Contact: Tel. 1-888-532-5666 or (514) 694-8871

### **November 7-10**

National Institute on Park and Grounds Management 29th Annual  
Educational Conference, Kansas City, MO, Contact: (920) 733-2301

## Welcome New Members

Hubert Catrice, Consultant, Turf for Horse Racing, Bailly, France

Doug Myer, Superintendent, Grounds Department, St. Francis Xavier  
University, Antigonish, Nova Scotia

Rob Sawicki, Leadhand, Turf Maintenance, City of Brantford

William Moffatt, Manager of Facility Operations, City of Hamilton

Tom Perry, Sales Manager, Bishop Seeds Limited

Brian Rosenburg, Technical Sales Representative, Nu-Gro Professional

Bruce Carman, Groundskeeper, The Country Day School, King City

**Join an organization that really pays off!  
Call the STA today and begin your exclusive  
membership benefits.**

