

SPORTS TURF MANAGER

... for safe, natural Sports Turf

JUNE 2002

VOLUME 15 • ISSUE 2

What's on the Horizon?

DR. R.W. SHEARD DISCUSSES NEW GPS TURF TECHNOLOGY

Over the past decade, GPS (Global Positioning System) has been promoted for Variable Rate Application (VRA) of fertilizer on crops, including turf. Based on a large number of soil test data to develop fertility maps, computer-controlled rates of application of N, P and K are applied using GPS to locate the applicator machine relative to the fertility map. This complex technology is reported to reduce fertilizer use, avoid pollution and provide very uniform growth.

The technology for VRA based on GPS is expensive, resulting in the application being conducted primarily by commercial applicators. Continued monitoring of the fertility of the turf area is required to upgrade the fertility maps. The most critical disadvantage, however, is the nitrogen rate. There is no generally accepted nitrogen soil test for turf on which to base the rate. Rather the turf manager has been advised to adjust the fertilizer applications for nitrogen to provide the colour and density that he



Optical sensors assess nitrogen deficiencies and spray fertilizer where needed. *Picture courtesy of NTech Industries, Inc. and Oklahoma State University (published in CAAR Communicator, Dec. 2001, Vol. 22, No. 5).*

desires. In general, if the colour is satisfactory, density will be okay. Therefore if a method of rating the colour is available, VRA systems can be developed for precise application of nitrogen according to the appearance of the growing crop.

A recent article in *CAAR Communicator* (Canadian Association of Agri-Retailers) reports the development of a VRA system based on light reflection or colour

of the plant. From light sensor readings, the amount of nitrogen the applicator should apply is determined as it passes over the plants at speeds up to 25 kph. The equipment, developed by Oklahoma State University, in conjunction with NTech Industries, Inc. is now available and a demonstration unit, known as the GreenSeeker, applied nitrogen to winter wheat this year in the US. Units for the application of nitrogen to cereals are expected to be operating in western Canada in the spring of 2003.

Sensors monitor the colour on a space about two-feet by two-feet. At this stage of the development of the unit, nitrogen is applied as a liquid. Using a three nozzle system, one of seven different rates of nitrogen can be delivered precisely to the plant leaf.

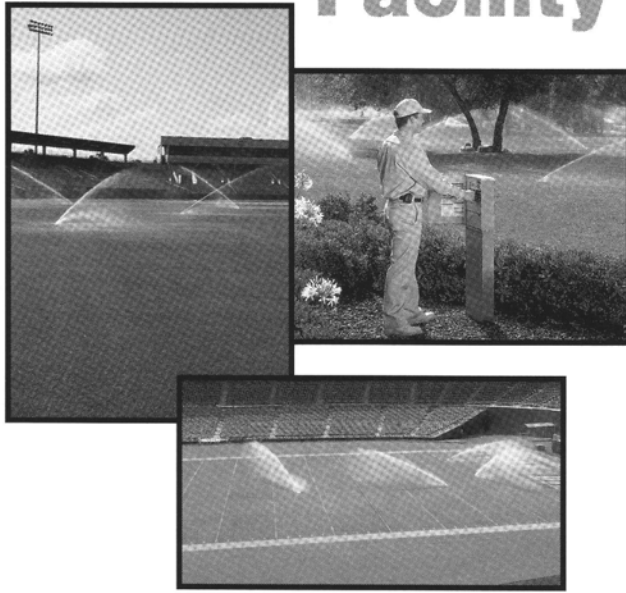
By the end of this decade, you may be calling your fertilizer dealer and saying "Give me Colour 7 application on fields 1 to 4 and a Colour 4 application on fields 5 to 10." ♦

In this 20 page issue of Sports Turf Manager, you'll find ...

Bringing you the latest from the Sports Turf Industry ...

- 3 Association Updates
- 4 President's Message
- 5 Media Relations
- 7 The Travellin' Man
- 8 STA Field Day
- 9 Weed Control
- 11 Pesticide Focus
- 17 Scholarship Winners
- 18 Coming Events

Update Your Facility



Resource management plays an increasingly critical role in sports field planning. Water, labor and energy-efficiency all impact the design of these sites. At Hunter Industries we feature an expanded line of rotors, sprays, valves and central control systems with technically-superior enhancements for improved water management.

For more information on an efficient Hunter system, contact us for your free copy of the Hunter Water Management Kit with ideas on how you can incorporate new water-saving techniques into your sports field plans.

At Hunter Water Management is Our Mission.

Authorized Hunter Distributor

Preserve Our Resources

Hunter
The Irrigation Innovators



Vanden Bussche Irrigation Ontario

Milton, 7856 5th Line S., 800-263-4112
King City, 12800 Keele St., 866-703-5464
Scarborough, 16-921 Progress Ave., 416-289-3635
Delhi, 970 James St., 800-387-7246

Stay on top with effective advertising ... call the STA office today!

Sports Turf Manager

www.rittenhouse.ca

- ◆ New & Used equipment
- ◆ Thousands of exploded parts breakdowns
- ◆ On-line specials
- ◆ Much more than just a website

Rittenhouse
Since 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@rittenhouse.ca



Call for a free
copy of our
**2002
BUYER'S
GUIDE**



EQUIPMENT LTD.
ISO 9002 REGISTERED

Paul Turner
Sales Representative

Cellular: (416) 566-0211

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

ZANDER
SOD CO. LIMITED

**SUPPLIERS OF TOP QUALITY
BENT AND BLUE GRASSES**

(416) 364-5700

TOLL FREE 1-877-727-2100
www.zandersod.com



United
Horticultural Supply

**Turf Seed
Granular, Liquid &
Organic Fertilizers
Plant Protection Products**

Dave Cowan ■ 905-242-0785 Simon George ■ 289-259-3012
Berni Peschutter ■ 519-878-4771
Bruce Sheppard ■ 519-660-9037 Bill Willaert ■ 519-420-7295
Phone: 1-800-328-4678 Fax: 1-800-922-2622

SPORTS TURF MANAGER

Volume 15, Issue 2
ISSN 1201-3765

is the official publication of the
SPORTS TURF ASSOCIATION OF ONTARIO
328 Victoria Road South, Guelph, ON N1H 6H8
Tel: (519) 763-9431, Fax: (519) 766-1704
E-mail: sta@gti.uoguelph.ca
Web: www.gti.uoguelph.ca/sta

2002 BOARD OF DIRECTORS

PRESIDENT

Paul Turner

PAST PRESIDENT

Jane Arnett-Rivers

VICE PRESIDENT

Andrew Gaydon

TREASURER

Rick Lane

SECRETARY

Bob Sheard

EXECUTIVE MANAGER

Lee Huether

DIRECTORS

Michael Bladon, Bill Campbell, Gordon Dol,
Roy Forfar, Chris Mark, Stephen Tolley

SPORTS TURF MANAGER

is published quarterly by the STA for free distribution to its membership. An annual subscription may be obtained for \$25/year. Please direct advertising inquiries to Lee Huether at the STA office.

EDITOR

Michael Bladon

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

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. 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 STA Mailbox

WE WELCOME COMMENTS ON ALL EDITORIAL CONTENT

Congratulations on an attractive and informative March 2002 newsletter. Your promotion of the ASTM standards was great. I served with Don on the F-2107-01 and Chaired the F2000-000. There are other standards that would be of value to your members. I would be pleased to do an article.

— Dr. Arthur H. Mittelstaedt, Jr., Ed.D.,
Executive Director, Recreation Safety Institute,
Ronkonkoma, New York

Editor's note: We have accepted Arthur's generous offer to write this article and look forward to publishing it in a future issue of *Sports Turf Manager*.

Congratulations on the excellent Volume 15, Issue 1 of the *Sports Turf Manager*. If you have extra copies of that issue on hand, please send four copies to me. I would like to give them to persons whom I am asking to apply for membership in the Association.

— Robert S. Broughton, Emeritus Professor, McGill University, Sainte Anne de Bellevue, Quebec

Editor's note: We are always pleased to assist our members in promoting the Association and our mission 'safe, natural sports turf through education and professional programs.' Your 'word of mouth' recruitment is the most valuable endorsement we possess!



ASTM Standards Available

VALUABLE GUIDES FOR SPORTS TURF MANAGERS

The following standards are available from the American Society for Testing and Materials .

• *Standard Guide for Construction and Maintenance of Skinned Areas on Sports Fields*, Guide F2107-01, \$30 US, and

• *Standard Guide for Fences for Ballfields and Other Sports Facilities*, Guide F2000-00a \$25 US.

For further information or to order, visit the ASTM website at www.astm.org or telephone (610) 832-9585.



MEMBERSHIP PLAQUES

Now available!

Sports Turf Association Display Membership Plaque in executive engraved walnut. **\$50 plus S&H.** To order, contact Lee Huether at the Sports Turf Association office.

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

Quote of the Month

"At a football game there are 70,000 people desperately in need of exercise watching 22 people desperately in need of rest." — Howard G. Hendricks, *Say It With Love*





Hello to our members.

Well it's that time of year again – spring! For all of us this is truly the busiest time of the year and 2002 is no exception. Can we have winter back?! The grass is growing, new students are in and all “#?#” is breaking loose. Just another year in the life of a turf manager. The only thing that is saving our skin is the fact that it has been a cool start to the spring; otherwise, we would be in deep trouble ...

I would like to take this time to thank all of our members who have renewed and updated their information for the 2002 season and to extend a sincere welcome to new members. This information is extremely important as it allows us to keep our database current, which helps us to inform you of new events, promotions and, of course, the annual STA Field Day. The 2002 *Membership Roster* is now being compiled and should be out to you in the near future.

Continuing on a positive note, the *STM Cumulative Index* is now complete. And what a task it was. All articles were sorted from 1987- 2001 to allow for quick reference. The project was undertaken by Mike Bladon and Bob Sheard who have spent a considerable amount of time working on this. Of course I should not forget our Executive Manager, Lee Huether, who worked along side Mike and Bob to get this task completed. Thanks from the Board and Membership!

In an ongoing effort to strengthen our association and membership, we sponsored another exciting educational event with our ORFA partners at St. Michael's College in Toronto. These workshops are designed to bring the turf knowledge of our association to the membership of the ORFA group. The workshop was a great success and a big thank you to Chris Mark and Jane Arnett-Rivers for doing some

great public speaking. The next joint venture with ORFA is in Halton Hills on October 23rd at the Mold-Masters SportsPlex. Look for further details in the newsletter.

Annual Field Day

The Sports Turf Association's 15th annual event has been finalized. It will be held September 12th at the River Oaks Recreation Centre in the Town of Oakville. The Field Day will consist of various topics that YOU, our members, have asked for. Irrigation is back on the agenda and no, not the same old stuff. We have allotted a set time in the program for Greg Snaith of Rain Bird to talk irrigation and about the new water management systems that are available to turf managers.

We will also be drawing on the resources of the University of Guelph to learn about turf covers for your soccer fields/ball parks and what to do about winter kill. This session will be presented by Dr. Julie Dionne who is the new Turf Management Faculty member with the Department of Plant Agriculture. Julie recently accepted the position and has since moved her family to Ontario from her roots in Quebec. On behalf of our members, we wish Julie much success.

Mel Lanford, a true turf professional who has earned his reputation from hard work and lots of experience, will be a featured speaker. Mel started out in the municipal sector and then moved to the private sector working with none other than the New York Yankees organization. He is a man who is full of knowledge and tips and he looks forward to sharing those with our members. Mel is featured every month in the Sports Turf Managers Association's magazine *SPORTSTURF*. Check out the **Travellin' Man** (as he is known) on page 7. Having Mel come over to Ontario is a major coup for the Association as he is currently one of the hottest speakers on the turf tour.

We will also have a visit from Becky Kellar, a member of Team Canada's women's gold medal hockey team who will tell us about the Olympic dream and the hard work and dedication it takes to get there. Of course she will bring her gold medal with her and I will have my camera on hand to get some shots!



STM

The annual STA Field Day will be held on September 12 at the River Oaks Recreation Centre in the Town of Oakville. An exciting line-up of speakers and exhibitors has been arranged.

I believe that we have another exciting day planned, so book it in your day planners and we will forward further information as it's available. Let's make it the best event yet! I look forward to seeing all of you in September at the Field Day.

In an effort to streamline member transactions and services, we now accept MasterCard and Visa to allow you to pay membership dues, buy books and of course, register for the annual Field Day. This is something you requested. The new Sports Turf Association website will be up and running in the latter part of the year. The new site is registered at www.sportsturfassociation.com and work will soon commence. Keep an eye out for more information. Have a great spring! ♦

The Ten Commandments of Media Relations

TIPS TO IMPROVE MEDIA COVERAGE OF YOUR BUSINESS, PROFESSION OR CAUSE BY DAVID LEONHARDT



Have you ever seen somebody interviewed on television and thought, "No, that's not how this industry works"? Have you ever faced criticism in the media of how you manage your turf?



The media act as a filter for society. It is the battleground in the war of public opinion. After 3,000 media interviews, I've learned a few things about the media. What follows are the Ten Commandments of Media Relations. They will lead you to greener pastures – and sports fields – in the war for public opinion and boost your credibility among potential clients and the public.

Though shalt not waste a journalist's time. Believe it or not, journalists are busy people. Editors wade through hundreds of news releases each day. Reporters struggle to assemble a story by deadline. The whole team works to edit

for space or time, check spelling and grammar, choose headlines and visuals, and bring it all together. Send a news release only when you really have something to announce. When calling a journalist, make it short and sweet; give the journalist the information he needs and respect his time as you would want yours respected.

Thou shalt build relationships with reporters. Of my three strategies to attract media attention, this is the one most likely to give you recurring benefits. This is the fertilizer that can make an "expert" out of you in the public's mind. And the one that gives you the heads up when a



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

MAR-CO CLAY PRODUCTS INC.

Tel. 519-669-3657 Fax: 519-669-8799
www.marcoclay.on.ca



Brian Rosenberg

Technical Sales Representative
Tel: 519-757-0077
Cell: 519-574-2013
Fax: 519-632-9376
E-mail: brosenberg@nu-gro.ca

Nu-Gro Professional

10 Craig Street
Brantford, ON N3R 7J1
Product Info Line: 1-800-268-2806

PICKSEED®
good things growing ...

PICKSEED Canada Inc.
Box 304
Lindsay, ON K9V 4S3
1-800-661-4769
FAX (705) 878-9249

Doug MacMillan
Lindsay, ON
Cell: 705-878-6426

Larry White
London, ON
Cell: 519-649-8777

Jason Lehman
Kingston, ON
Cell: 613-328-1628



PLANT PRODUCTS TURF

- Turface MVP, Moundmaster
- Turf & Tree Fertilizers
- Pest Control Products

Plant Products Co. Ltd.
Brampton, Ontario
905-793-7000 or 1-800-387-2449
Fax 905-793-9632 • plantprod.com

future trouble spot is brewing in the media. In my online **Make some NOISE!** course, I propose a four-step process to build relationships with journalists. This takes some effort – and like every other relationship, it has to be built on trust.

Thou shalt stick to thy message.

This seems obvious, but so often media spokespeople fail to stick to their messages. For instance, if your statement is about the safety of dense turf for children running on the field, focus on safety. Don't try to also sneak in messages about the environment, your expanding market share, or some award your company has won. (And it is not your responsibility to defend pesticide companies, or anybody else, just how you handle pesticides responsibly.) Define your message and make sure everything you say supports that message. Similarly, if a journalist tries to put words in your mouth or get you to wander away from your message, don't let her get away with it. Answer the question in a way that bridges back to your message.

A reporter asks you a question. You don't know the answer. Do you try to fake it or do you just admit you don't know the answer? David Leonhardt explains in point #9 – thou shalt not fake it!

Thou shalt not be a dead end. So the reporter calls you with a question you cannot answer. Should you hang up? If you are a reporter's dead end, she'll be unlikely to call you up again. If you can't answer her question, refer her to someone who can (preferably not a competitor). So if a reporter asks a question about residential lawn care, refer them to someone who is an expert in that field. Or promise to call her back with the information. Or give her some other information that may be useful for her story. But don't send her away empty handed.

Thou shalt not advertise. Is the media there to provide you with free advertising? No way. It's there to deliver news to its audience. Erase from your mind the attitude that you are advertising. Don't write news releases to sound like market-

ing pieces. Don't speak to the camera as if you were taping a commercial. The credibility media coverage gives you comes from the fact that it is NOT advertising. And journalists will feel no responsibility to do your marketing for you.

Thou shalt not have another spokesperson.

This is the only NEVER I offer in my online course and in my live seminars. NEVER let someone else be your spokesperson. It's fine to hire someone to write and distribute a news release or to set up interviews, but nobody else carries your credibility in the media. It has to be you. Your expertise is sports turf. A P.R. firm's expertise is P.R. Guess which one the reporter will trust when seeking expert advice on sports turf.

Thou shalt comment. So a reporter asks a negative or embarrassing question. What do you do? Avoid saying, "No comment." No answer you can give will look worse in the media than a report that you refused to comment. Provide an answer in your own words; don't repeat a report-

er's negative answer. Say as much as you can. Explain why you cannot divulge more (client confidentiality, the information will be announced later, etc.) When confronted with bad news, the best thing to do is what the makers of Tylenol did in 1982 and 1985. The company pre-empted media questions about the dangers of some poisoned tablets by announcing the safety steps it was taking.

Thou shalt give notice. If you want the media to cover your story, give them notice. They need time to reserve a camera. They need time to do background checks and find other sources to comment. Making last minute announcements is not a good way to cut naysayers out of the story. It is a great way to kill the story. The "naysayers" give the story balance – and without balance, the journalist has no

story. When my book, *Climb your Stairway to Heaven: The 9 Habits of Maximum Happiness*, was nearing its publishing date, I sent out an advance notice to reviewers. I sent out a reminder note again that the publishing date was fast approaching

Thou shalt not fake it. Here's an interesting scenario. The reporter asks you a question. You don't know the answer. Do you try to fake it or do you just admit you don't know the answer? A former boss of mine answered a question incorrectly before a parliamentary committee, when he knew he had no idea what the right answer was, leaving me to pull up his weeds. You are more impressive saying, "I don't have those statistics in front of me, but here's what I do know ..." than to prove to the world that you don't have a clue what you're talking about.

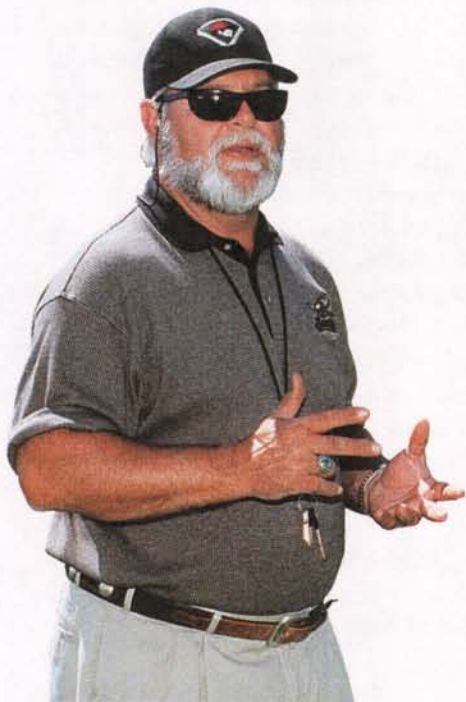
Thou shalt piggyback. Wow! You received great coverage in the morning paper. But did the local radio station see the story? They did if you forwarded a copy. Did all your potential clients see the story? Make sure they do. I was impressed by a marketing kit I received from a high-end caterer. I opened the folder and there I was faced with two items: a letter of introduction and a pair of press clippings. What about other things you do? Do you have a newsletter? Have you added key media contacts to the distribution list? What about a home page on your web site? Do you advise the media when you make major changes? Piggybacking means getting more for your efforts. It's one of several bonus tips I offer in my online course.

Now that you've read this article, are you ready to become a media spokesperson? Well, there's still a lot more to learn. But this article does give the most important information you need to know – the Ten Commandments of Media Relations. ♦

For a copy of David Leonhardt's special report Get In The News, send \$15, or for the video It's your message. That's what counts, send \$25 to 417-711 Bay Street, Toronto, ON, M5G 2J8. Or visit him at www.leonhardtonline.com.

On the Road with Ace

"BUILDING A STRONG WORK ETHIC" BY TRAVELLIN' MAN MEL LANFORD, FEATURED SPEAKER, 2002 STA FIELD DAY



In 1999 my wife, Teresa, and I made a decision that changed and enriched our lives. We sold all of our household possessions, purchased an RV, secured corporate sponsors and created the Ace of Diamonds Tour. Three years later, I'm still travelling. I've been privileged to meet some true characters, many of whom have become my teachers and keep me informed of interesting issues and facilities that have deepened my appreciation and love for all things related to baseball.

Each month, "On the Road with the Ace" will profile different people and places that I encounter on my travels. So, sit back and ride along with me for a few minutes while I introduce you to two dedicated colleagues who share your passion for sports fields. I enjoy meeting fellow professionals and learning about your dif-

ferent methods, challenges and personalities and I look forward to visiting a ballpark near you soon.

Building a strong work ethic

"I'd give an arm and a leg for these work ethics."

Hoover, AL—Athletic field manager Kenny Shaw of the Hoover Board of Education maintains two very high profile sports complexes, the Spain Sports Complex and the Hoover High School Complex. Both facilities have eight fields each and the \$55 million, newly constructed Spain facility includes some \$10.5 million in field construction.

Kenny took on this 16-field responsibility a year and a half ago. With no labor force and limited equipment, he tackled the grow-in and maintenance by himself,



EVERGREEN™

The Turf Blanket the World Relies on

- Earlier spring green-up
- Faster seed germination
- Deeper root development
- Delays dormancy in fall
- Ideal winter blanket
- Best for quick turf repairs
- Available in any size
- 3 or 7 year warranty covers

Copyright ©2002, Covermaster Inc.

COVERMASTER™

COVERMASTER

COVERMASTER

MASTERS IN THE ART OF SPORTS SURFACE COVERS

MEMBER:




STADIUM MANAGERS ASSOCIATION

**TO FIND OUT MORE,
CALL TOLL FREE
1-800-387-5808**

www.covermaster.com
E-MAIL: info@covermaster.com

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

UNCOVERED... COVERED...



EVERGREEN IS GREAT FOR BASEBALL FIELDS



welcoming volunteer help from industry partners in the evenings and weekends. He has since assembled a four-man crew and acquired the proper equipment and materials to effectively maintain his fields with a low-labor budget. Like most people in the profession, Kenny's passion for sports field management comes from a lifelong love of sports.

"If it had a ball involved, I played it," Kenny says. "Working these facilities allows me to remain involved in sports every day."

Kenny isn't your typical amateur athlete turned athletic field manager. Plagued for more than 20 years with avascular neurosis, a condition that causes deterioration of cartilage and bone, the 37-year-old married man underwent surgery February 4 to replace his left hip. After missing only one week of work, he returned mid-February on crutches to do whatever he could until he recuperates. Six weeks later, the other hip will be replaced. Kenny is more

concerned today about the development of his winter ryegrass than he is about his surgeries. In my opinion, Kenny deserves the "Ironman in Sports Field Management" Award.

Excited about the newly formed Alabama STMA, currently supported by Alabama vendors and educators, Kenny believes that athletic field managers have an excellent opportunity at STMA for education and networking that is vital for career success.

Nashville, TN—At an early age, most young people have role models they admire. Whether it's a parent, preacher, coach, teacher or relative, someone instills certain values and sets examples for a good work ethic.

Marty Kaufman, assistant sports field manager for the Tennessee Titans, was raised near an Amish farm community in central Ohio. These devoted farmers and craftsmen set a high standard of discipline

and work. When Marty was not involved in school or sports, his spare time was spent at his grandfather's farm, just down the road from his own home.

Grandpa lost his left arm as a young man in a farming accident and had to improvise. When he would do mechanical work on the old tractor or farm implements, he would use his right hand and anything else, his chin, teeth or chest, to get something done. Marty was amazed watching this as a child, but looking back, amazement has turned to respect for Grandpa and a strong appreciation and understanding for what hard work really is.

During the off-season, Marty spends his time arranging upcoming events for the Tennessee Valley STMA, for which he currently serves as program director under president-elect Bob Elliott of Nashville.

Where did you get your work ethic? ♦

— Reprinted with permission of *SPORTSTURF*, Volume 18 (3), March 2002



STA 15th Annual Field Day – Program at a Glance

THURSDAY, SEPTEMBER 12, 2002, RIVER OAKS RECREATION CENTRE, OAKVILLE, ONTARIO

8:00 – 8:45 am Registration
Refreshments with Indoor Exhibitors

8:45 – 9:00 Opening Remarks

9:00 – 10:00 *Intelligent Irrigation*
Gregory Snaith, P.Eng., Rain Bird International

10:00 – 10:15 Refreshments
with Indoor Exhibitors

10:15 – 11:00 *The Olympic Experience*, Becky Kellar,
Member, Team Canada,
Women's Hockey

11:00 – 11:45 *Introduction to Turf Covers*, Dr. Julie Dionne, University of Guelph

11:45 – 12:30 pm Lunch

12:30 – 1:30 Meet with Outdoor Exhibitors, *Demonstrations on request*

1:30 – 3:30 *The Ace of Diamonds*
Travellin' Man Mel Lanford

3:30 – 4:00 Questions/Mix & Mingle

Sessions and Speakers

Intelligent Irrigation

Intelligent irrigation is about applying the right amount of water at the right time based on plant water requirements. Over-irrigating can be just as detrimental to the health of plant material as is under-irrigating. Learn about what's new, available technology, and how technology can be used to simplify the challenges of irrigation scheduling throughout a changing season.

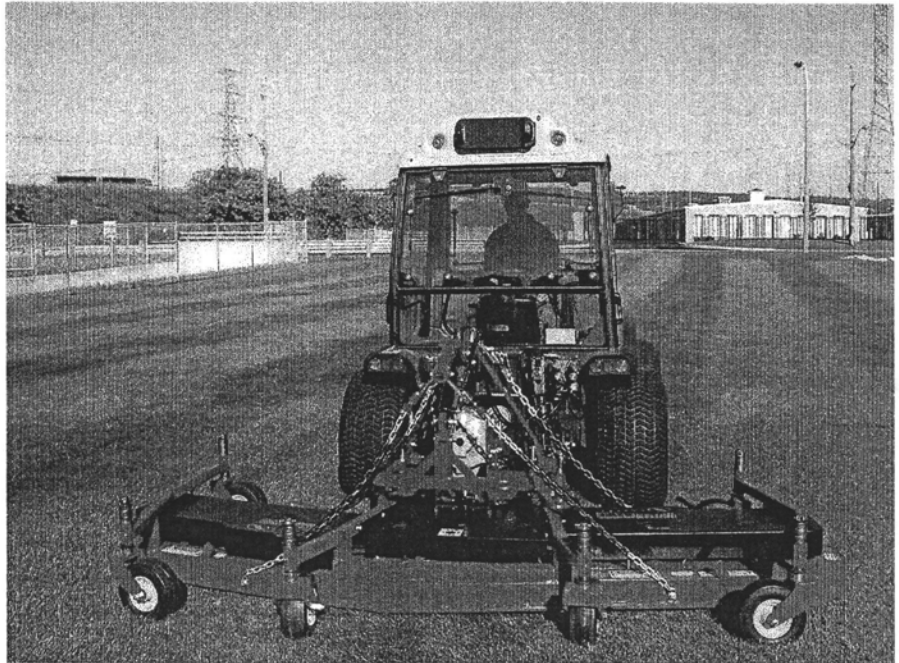


Gregory Snaith received his Agricultural Engineering degree from the University of Alberta in 1988. Following graduation, he worked in Alberta for eight years specializing in agricultural irrigation. In January of '97, Gregory launched out on his own, managing an irrigation engineering consulting business. In December of '98, he joined Rain Bird International and

MULTI-FUNCTION POWER UNIT FOR ALL SEASONS

G.C. Duke Equipment Ltd. offers a highly specialized multi-function power unit manufactured by Antonio Carraro. The TTR9400 offers a fully reversible seat with bi-directional drive and is available with front and rear 3 point hitches and 540 power take-offs. Our spacious all season, climate controlled, panoramic cab provides the operator maximum comfort and field of vision while reducing operator fatigue. Utilizing an 87 h.p. turbo charged Detroit Diesel engine, the TTR9400 makes light work of simultaneously cutting grass and aerating or snow removal and salting in the winter.

For more information, contact Dick Raycroft at 1-800-883-0761 ext. 116 or e-mail draycroft@gcduke.com. ♦



NEW ICR LONG-RANGE REMOTE CONTROL INTRODUCED

Hunter Industries has announced the release of the ICR, a new long-range remote control unit that allows operational access to irrigation systems within a two-mile radius. The ICR (Institutional Commercial Remote) is designed to interface with all Hunter controllers with a SmartPort® connection, including the Hunter ICC, Pro-C and SRC.

The ICR is especially useful for landscape maintenance and installation personnel who monitor irrigation operations of large commercial and residential sites.

Using the ICR, contractors can quickly access irrigation systems of shopping centres, industrial complexes, college campuses, condominium associations, cemeteries, sports fields, municipal parks and other large multi-station facilities.

In areas obstructed by large buildings, walls or trees, the ICR has the power to communicate within a half-mile range. It accepts up to 128 different programmable security codes so that any number of ICR receivers can be installed in the same area.

Irrigation professionals find the ICR offers important time-saving advantages because it eliminates the need to travel back and forth to a controller in order to activate a system.

During winterization, for example, the user can quickly "blow out" the lines by advancing through the zones. At installation and start-up, pumps, valves and sprinklers can be activated with the ICR to verify operation and to flush debris from the lines. During routine inspections, contractors can pinpoint irrigation problems by running through the zones using the ICR.

The ICR features a large LCD display and easy push button operation. The unit also offers variable remote activated station run time, which allows a one-time change in the watering schedule without affecting the regular program. The product has a five-year warranty.

For more information, contact your local Hunter distributor or Hunter Industries at 1-800-733-2823. Visit Hunter online at www.HunterIndustries.com. ♦



NOW AVAILABLE THROUGHOUT ONTARIO

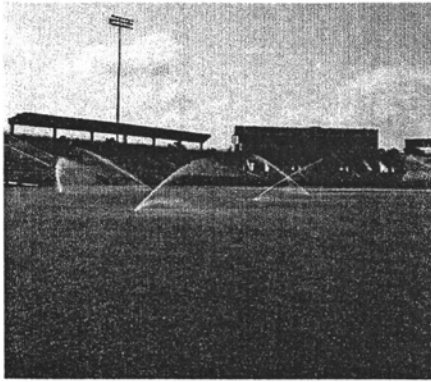
Fertilec Ltd. proudly announces that pelletized limestone and gypsum are now available from all Ontario distributors.

Pro Lime (50 lb bags) and Lime Rite (40 lb bags) both have excellent neutralising value and are probably the most soluble pelletized limestone products currently on the market. Magnesium soluble 12% + high level of calcium, 23% + NVA 75%.

Gypsum is pelletized with polymer, works extremely fast and is long lasting. It neutralizes the effects of road salt and contains a high level of sulfur (15%) and 22% calcium.

For more information, contact Fertilec at 1-888-831-1085 or visit www.fertilec.com. ♦





VANDEN BUSSCHE ADDS HUNTER IRRIGATION INNOVATIONS TO ITS TEAM

Vanden Bussche Irrigation is pleased to announce the addition of the Hunter Industries product line in its continuing efforts to better serve their customers.

Hunter Industries is among the world's leading manufacturers of irrigation equipment for turf, landscape and sports fields. Two new irrigation innovations are the Rain-Clik™ and Wireless Rain-Clik™ rain sensors that feature the exciting Quick Response™ instant shut-off feature.

Normal rain sensors will allow an irrigation system to operate while it's raining, only shutting down the system once a pre-determined quantity of rain has fallen. Within 2 to 5 minutes after it starts to rain, the Rain-Clik™ will interrupt the controller and keep the system from operating. Public perception that water is being wasted during periods of rain is now no longer a concern.

For more information, contact Vanden Bussche Irrigation & Distribution at 905-875-4545 or 1-800-263-4112 or visit www.vandenbussche.com. ♦

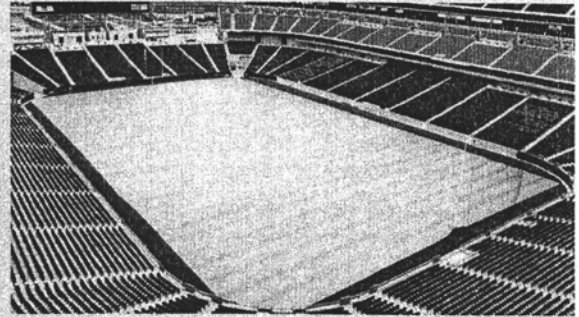
SPORTS FIELD TURF MAINTENANCE MADE EASIER WITH EVERGREEN™

Put EVERGREEN™ to work on a natural grass football or soccer field and you solve many turf maintenance problems.

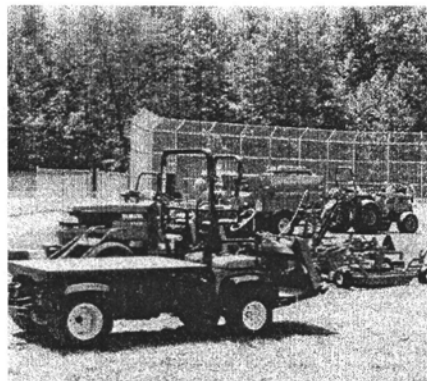
In use worldwide, this turf blanket by COVERMASTER® introduces a range of turf maintenance advantages that any serious minded groundskeeper would wish for.

It greens-up grass quicker in the spring and keeps it so longer in the fall. It's ideal for quick seed germination during construction and repairs of heavy wear areas of the field such as in between hash marks or in goal mouths. Used with sod, it enhances and accelerates root growth to establish strong and healthy turf in much less time and much more vigorously than with conventional methods.

EVERGREEN™ works by creating a 'greenhouse' type of effect, allowing grass to breathe and retaining the right amount of heat and moisture to promote rapid growth. Another welcome benefit is the fact that EVERGREEN™ virtually eliminates spring clean-up because most debris, leaves, twigs, etc. will not cling to the cover. To top things off, it is also very effective to protect



grass during periods of morning frost. For samples, literature and complete information on EVERGREEN™, call Covermaster Inc. toll free at 1- 800-387-5808, fax 416-742-6837 or visit www.covermaster.com. ♦



Annual Field Day

The 15th Annual STA Field Day will be held on September 12, 2002 at the River Oaks Recreation Centre in the Town of Oakville.

If your company is interesting in exhibiting or sending employees to the event, please contact Lee Huether at the STA office at 519-763-9431 or email sta@gti.uoguelph.ca.

NOW AVAILABLE! Understanding Turf Management by Dr. R.W. Sheard



A practical manual for the management of safer, natural turf facilities for outdoor sports. The concepts are applicable for any turf manager – from golf course superintendents to the parks supervisor – whether maintaining golf greens, sports fields or race tracks for thoroughbreds. • 24 chapters • 161 pages

ORDER FORM (please print) Please send me ___ copies.

- \$30 – STA members and orders exceeding 10 copies
- \$35 – Others

Shipping and handling: \$2.50 for 1 copy

Please contact the STA office for multiple copy rates. (No GST*)

TOTAL _____

*STA is a public service body with annual worldwide supplies of goods and services of less than \$50,000

Name _____
 Facility/Company _____
 Address _____
 City _____ Prov. _____
 Postal Code _____ Phone _____
 E-mail _____

Make your cheque or money order payable to *The Sports Turf Association*, and mail to: Sports Turf Association, 328 Victoria Road South, Guelph, ON N1H 6H8
 For more information: Ph: 519-763-9431 • Fax: 519-766-1704 • Email: sta@gti.uoguelph.ca

Published with the generous support of



90

The Problem

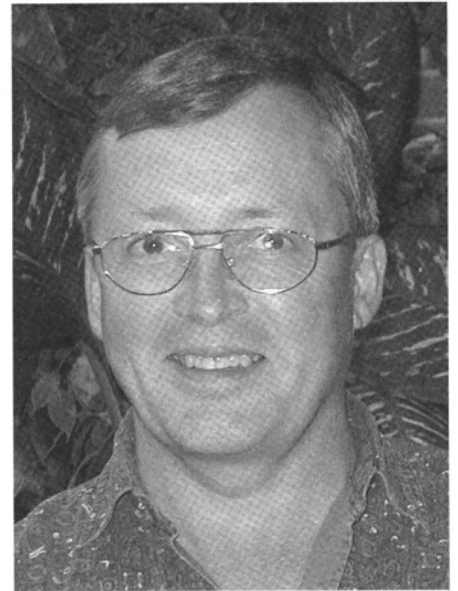
Dandelion (*Taraxacum officinale* Weber) is a major turfgrass weed in golf courses, sports turf, municipal parks and home lawns. There are several herbicides registered for the control of dandelion and other broadleaf weeds. These herbicides generally provide good weed control but there have been mounting concerns about the potential negative effects of pesticides on humans, animals and the environment.

These concerns have resulted in numerous municipalities in Ontario, Quebec and elsewhere to ban or severely restrict the use of 2,4-D and related herbicides on public and private property. In Canada, most pesticides (91%) are used for agricultural purposes, and herbicides account

for 85% of the market. 2,4-D still accounts for 1/4 of all pesticides used in Canada and it is the most common herbicide used for domestic purposes. Similarly in the United States, 2,4-D has the largest volume of usage in non-agricultural sectors (23-26 million lbs. in 1997).

Project Team

A Collaborative Dandelion and Broadleaf Weeds Bioherbicide Project was established in 1994 supported by a NSERC TPP grant involving three academic institutions, McGill University, University of Guelph, Nova Scotia Agricultural College, and several industrial partners including BioProducts Centre Inc. (Saskatoon), Saskatchewan Wheat



moved with his family to Ontario to manage the turf market for Ontario, Manitoba and Saskatchewan. Gregory resides in Guelph and is the Area Specifications Manager working closely with landscape architects, city park managers and water conservation authorities.

The Olympic Experience

Becky Kellar will share her journey with the Women's Olympic Hockey Team to Salt Lake City and, ultimately, the gold medal game which saw Team Canada victorious over the United States with a 3-2 win. No stranger to the world arena, Becky was a member of the silver medal team at the 1998 Olympic Games in Nagano, Japan and played in three World Championships in 1999, 2000 and 2001, winning three gold medals. She graduated from Brown University in 1997 where she played hockey for the Brown University Bears for four seasons. An Academic All-Ivy Award winner (academics and athletics), Becky is also well acquainted with turf, hav-

ing played four years on the Brown University softball team.

Introduction to Turf Covers

Although still in the experimental stage on soccer, ball and football fields, covers have long been relied upon on golf courses to protect turf. Whether the renovation season must begin later due to late fall permitting or trying to get that germination in early April for mid-May use, covers can extend your germination window. With both successes and failures under our belt, here is what the sports turf industry should know. Reduction of winter damages (freezing temperature, desiccation, ice), enhancement of turf establishment, and other potential uses of covers will be discussed.

Dr. Julie Dionne is the new Turf Management Faculty Member with the Department of Plant Agriculture at the University of Guelph. Her research interests include physiology of turfgrass species in relation to environmental stress tolerance; winter protection of golf greens; biology and physiology of annual

bluegrass; turfgrass management and fertilization; and, integrated pest management in urban landscapes and golf courses.

The Ace of Diamonds

Mel Lanford, a 30-year veteran of the groundskeeping industry, is the creator and host of the Ace of Diamonds Tour. A former professional groundskeeper at the collegiate and minor league level, Mel travels across the United States year-round presenting hand-on seminars, demonstrating proper infield and sports turf maintenance materials, equipment and techniques to athletic field managers. We are fortunate to have the opportunity to import Mel and his expertise over the border and into Ontario for the day!

For More Information

The complete Field Day brochure with registration details will be forwarded soon to all STA members. For more information, contact Lee Huether at the STA office. ♦

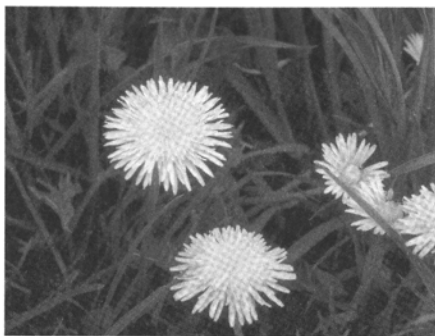
Pool and Dow Agro-Sciences Canada Inc. The overall goal of this project was to develop a natural, safe alternative to traditional chemical pesticides, an environmentally benign product for the biological control of dandelion and other broad leaf weeds. Moreover, this product should be competitively priced, easy to use, well packaged and have good storage stability.

Research

Experiments were replicated at three locations (McGill, Nova Scotia Agriculture College and University of Guelph) and applied in June, July and September. KILLEX (2,4-D/dicamba/mecoprop) at 1.7 kg ai ha⁻¹ was the standard chemical herbicide treatment used in all experiments. A commercial preparation of 0.6% Killex was applied at a rate of 200 ml m⁻². Eight fungal isolates were evaluated for their efficacy to control dandelion under field conditions. The fungal isolates included spore and/or mycelial liquid formulations of *Phoma herbarum* (G5/2), *Phoma exigua* (GIII), *Phoma* sp. G961.16), *Myrothecium roridum* (AC133), *Plectosphaerella cucumerina*, MAC2 (*Curvularia inaequalis*), MAC4/H (*Colletotrichum* sp.), and two solid formulations of *Sclerotinia minor* (MAC1a and MAC1b). *S. minor* was applied as sodium alginate granules (MAC1a) and barley grit formulation (MAC1b). MAC1 was consistently the most effective isolate at controlling dandelion in these trials.

Efficacy of MAC1

The product may be broadcast on turf using a drop spreader (1X rate of 60 g m⁻²) or spot applied to the crown of broadleaf weeds (0.4 g per plant). Best efficacy is achieved with the barley grit formulation, although a kaolin-based formulation of the liquid fermentation product also gives very good results. When conditions are most suitable for activity of MAC1, lesions develop quickly and a complete kill can be achieved within 7 days (about twice as fast as Killex). These conditions include daytime highs of 18-24°C and rainfall or irrigation within 12 h of application. In these conditions, overall activity is as good as, and often better than Killex. The risk of poor performance in hot and dry



Toxicity studies haven't yet been performed, but based on literature and experience, the fungus poses no acute or chronic toxicity concerns.

weather can be minimized by applying the product in the evening and irrigating 12 h later. The product showed no effect at 2X on several turf grasses. The product is compatible with normal lawn maintenance operations such as mowing (except for a 3-day post-treatment no-mowing period), fertilization and irrigation.

Production/Economic Considerations

MAC1 is mass produced on barley grits for solid state production or scaled up in liquid fermentation prior to formulation in granular form. Quality control and quality assurance procedures have been developed. Currently, shelf life is approximately 5 months at 5°C and 2-4 weeks at 20°C. Further improvements of the production method and shelf life can be achieved. Preliminary research on the turf weed control market in Canada was performed. Preliminary estimations of field, registration and scale-up R&D, anticipated production costs, target pricing and market penetration demonstrated a high potential profitability with investment recoupment 2-3 years after launch.

Safety and Regulatory Issues

Toxicity studies have not yet been performed, but based on literature and experience, the fungus poses no acute or chronic toxicity concerns. It does not grow at 33°C or above and is not known to pro-

duce mycotoxins. A pre-submission consultation with the PMRA has taken place and the studies required and possible waivers were discussed and outlined. Additional information has been gathered since then and a follow-up consultation will take place in the near future.

Damage ranging from small lesions to complete kill may occur on a relatively wide range of desirable broadleaf species (ornamentals, vegetables, etc) when the mycelium growing on barley grit or weed tissue is brought in direct contact with the susceptible plant. Therefore, desirable species should not be treated directly. Similarly, when mowing the treated lawn, use of a mulching mower is recommended. Alternatively, clippings should be directed away from desirable broadleaf plants.

Despite a potentially wide host range in optimum disease conditions, the fungus has an agronomically significant effect on only one minor crop host in Eastern Canada. It is endemic to ecoregions 1 and 4 (BC coastal, Southern Ontario, Quebec and the Maritimes). Formation of sclerotia occurs only rarely following turf application. When it does occur, it is limited and mainly associated with clumps of barley grits rather than infected weed tissue. The viability of laboratory-produced sclerotia decreases rapidly on the soil but a few sclerotia may remain viable for 11 months. Sclerotia are rapidly killed in active compost. Various field experiments using a highly sensitive broadleaf species showed no infectivity of the MAC1 product in the turf environment after only 4 months. Research is underway to develop failsafe mechanisms that prevent sclerotial development by the product.

Summary

MAC1 is a safe and well-characterized plant pathogenic fungus with a narrow agronomic host range. MAC1 can be cultured in liquid or solid fermentation. When formulated as a granular product, an application of MAC1 to dandelions in turf results in rapid control of the weed with no injury to turf grass. Other broadleaf weeds can also be controlled. Direct dosing of desirable broadleaf species should be avoided. ♦

Pesticide Exposure and Human Health (Part 1)

DONNA L. HOUGHTON, Ph.D., SYNGENTA CROP PROTECTION CAN. INC.

Being in the business of managing or researching turf, you no doubt have been asked many questions concerning the safety of pesticides and their impact on human health.

In this article, the first of a two part series, I will provide you with background information that will help you address public inquiries on this subject. This issue's article will focus on the regulation of pesticides in Canada, fundamentals of toxicology, acute toxicity of pesticides in comparison with common substances, misconceptions regarding the toxicity of natural chemicals and the difference between acute and chronic toxicity. Part two of this article will address the concept of risk and allegations that pesticide exposure is responsible for various health effects such as cancer and asthma.

Pesticides are products that are designed to kill unwanted living organisms; therefore, they need to be handled with respect. They can be used safely because the dose required to cause serious health effects in humans is significantly higher than the dose required to control the target pest. The fundamental principle of toxicology, which is the study of noxious effects of chemicals on living systems, is that "the dose makes the poison." This principle was recognized many centuries ago but was not put into writing until the early 1500s. "All substances are poisons;

there is none that is not a poison. The right dose differentiates a poison and a remedy" [Paracelsus (1493-1541), the father of toxicology].

Despite what the general public has been led to believe, either by the media or various environmental groups, pesticides are indeed regulated in Canada. In fact, Canadian regulations are the most stringent in the world and it is very important to communicate this fact to the public. In addition, pesticides are the most highly researched and regulated group of chemicals sold in this country.

Canadian Regulation

A pesticide cannot be sold in Canada until it is "registered" by the federal government. The term "registered" means that the product can be legally sold and used as per regulations outlined in the Pest Control Products Act (PCP Act). The Canadian Pest Management Regulatory Agency (PMRA) is responsible for reviewing the scientific data on new products submitted for registration by chemical companies. The PMRA is very thorough when reviewing data and it requires a lengthy review period due to the large



quantity of scientific information that *must* be submitted by the pesticide manufacturers (100's of studies). New pesticide reviews conducted by the PMRA generally take a minimum of 2 years. Pesticide submissions consist of the results of scientific studies that address the following subjects/questions regarding the newly proposed product:

Chemistry (chemical information regarding the active ingredient and the end-use product). The active ingredient is the chemical in the pesticide formulation that provides the desired mode of action, e.g. it provides the herbicidal, insecticidal or fungicidal activity. The terms "end-use

Make
the
Switch
to
Quality



Quality Seeds

Since 1956

1-877-856-7333

or 905-856-7333

8400 Huntington Rd.

R.R.1, Woodbridge, ON

Quality Seeds
for Sod Growers.
Golf Courses,
Sports Facilities,
Municipalities
and Landscape
Contractors

John Konecny
Eastern Wholesale
Division Manager
Cell: 905-342-7044

Peter Coon
Western Wholesale
Division Manager
Cell: 705-715-3760



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

J. Robert Dippel

SEEDS



product” or “formulation” refer to the active ingredient plus the liquid or solid materials added to the active ingredient to make it suitable for handling, application or storage, e.g. water, solvents, clay, thickeners and stabilizers. Formulations can be liquids, wettable powders, granulars, etc.

Toxicology. Results of studies conducted on laboratory animals to evaluate the potential for health effects such as cancer, birth defects, genetic mutations and effects on the reproductive and nervous systems

Metabolism. To determine how the chemical is metabolized (broken down) by mammals and plants

Residues. In the crop (agricultural scenarios) and its by-products

Dietary, Occupational and By-stander Exposure. To determine the potential for pesticide exposure to workers and bystanders during application or contact with treated surfaces such as turf and/or dietary exposure through consumption of treated produce (agricultural uses)

Environmental Impact. To determine residues in soil and water, environmental fate and effects on non-target organisms

Effectiveness. Results of performance trials.

It can take up to 12 years from the time a chemical is discovered in the lab through to the complete research and registration process and cost in excess of \$100 million (CDN) to bring one new active ingredient and one of its corresponding end-use products to market.

Due to the stringent registration requirements in Canada, not all pesticides submitted to the PMRA are granted a registration. In fact, it is currently very difficult for a company to gain a registration in this country. The PMRA’s mandate is to protect occupational workers, the general public and the environment by ensuring that pesticides to be registered are effective and can be used safely provided label directions are followed, and thus the agency plays a critical role in protecting Canadian citizens. The PMRA employs more than 350 individuals to perform this task and, understandably, they err on the side of caution to ensure that their mandate is achieved.

Toxicology Principles

Before addressing whether or not exposure to pesticides causes an increased risk of certain health effects such as

asthma and cancer (Part 2), it is critical to explain the fundamental principle of toxicology, the difference between acute and chronic toxicity, and misconceptions regarding natural and man-made chemicals.

No doubt you have heard people talk about how “toxic” one substance is compared to another. In this context, the term “toxic” generally refers to the *acute toxicity*, or the adverse effects that occur following a single or multiple exposures to a substance within a 24-hour period. However, some chemicals can also cause persistent health effects following exposure to lower doses continuously for long periods of time. This type of toxicity is referred to as *chronic toxicity*.

Toxicologists measure the *acute toxicity* of a chemical using a value known as the LD50, which stands for Lethal Dose 50%. Determining this value also makes it possible to roughly compare the relative toxicity of various substances in a general sense (technically, the slope of the dose-response curve should also be studied). The LD50 is derived from studies conducted on laboratory animals (rats, mice and rabbits). Animals are exposed to the chemical either orally (via diet or stomach tube), dermally (applied to the skin), or via the inhalation route (breathing air containing the pesticide).

The dose, in milligrams per kilogram of body weight (mg/kg), which is lethal to 50% of the test animals within a stated period of time (usually 24hrs), is the LD50. When the chemical is administered in the air, as it is in inhalation studies, toxicity is measured using the LC50 or lethal concentration in milligrams/litre of air (mg/L) required to kill 50% of the test animals. The important point to remember is that the lower the LD50 or LC50 value, the more *acutely* toxic the substance because a smaller quantity will be lethal to 50% of the test animals.

Chemical Origins

There is a common misconception among the general public that natural substances are “safer” than those that are man-made. The word “chemical” unfortunately conjures up negative images in the minds of the public. In reality, all matter is composed of chemical building blocks called atoms. Examples of atomic elements are

hydrogen, oxygen, carbon and nitrogen – there are over a 100 of them. Everything in our world, natural and man-made, is chemical and is made of the same atoms – the food and water we consume, our clothing, medicine, cosmetics, furniture, the plants in our garden, even our own bodies ... and of course, the pesticides we use.

What differentiates one substance from another is the number, combination and configuration of atoms that make up the substance. Once we accept that everything around us is chemical, we realize that what people are really concerned about are *man-made* chemicals. Scientists have created new combinations and configurations of these basic building blocks not found in nature. Consequently, a whole host of synthetic products are now available e.g. plastics, pharmaceutical drugs and pesticides, to name a few. Many drugs and pesticides, however, are synthetic mimics of compounds found in nature e.g. synthetic pyrethroids.

While pharmaceutical drugs have a perceived health benefit in the minds of the public, pesticides are viewed as hazardous to human health because they are used to kill living things. In reality, there are many substances to which people are routinely exposed that are much more acutely toxic than most pesticides. The most toxic substance known to man is not man-made, it is a natural compound called botulinus toxin that causes botulism and is produced by a bacteria *Clostridium botulinus*. However, this toxin has been applied successfully in cosmetic surgery because extremely low doses are used. Remember, “The dose makes the poison.” Nature has also produced many natural pesticides such as pyrethrins and nicotine from chrysanthemums and tobacco, respectively.

Some chemicals have been used as both drugs and pesticides and may even have additional uses. For example, hydrochloric acid has been regulated as a household product when used in cleaning agents, a drug when used to treat people with low gastric acidity and a pesticide adjuvant when used to enhance the germicidal activity of chlorine in swimming pools. Hydrochloric acid is natural when produced by the stomach and synthetic when made

in the lab – even though its chemical structure (arrangement of atoms) is the same regardless of whether it occurs naturally or is man-made. The toxicity of hydrochloric acid is the same when it is used as a drug, a pesticide, a cleaning agent or when produced by the stomach. It is the *dose* in each of these cases that is different.

The fungicide thiabendazole has been used successfully as a deworming agent in humans and animals as well as a fungicide for agricultural crops. Coumarin compounds such as warfarin are excellent rodenticides, but these compounds are also valuable anti-coagulant drugs. Many compounds that are screened for pesticide activity and are not accepted become drugs and vice versa. In summary, *the toxicological properties of any chemical are independent of its uses and whether it is natural or man-made.*

Potential for Harm

Any chemical, if absorbed by the body in excessive amounts, can be poisonous, even substances that are natural and substances to which the public is exposed on a daily basis. It is well recognized that smoking is hazardous to human health because it increases the risk of various types of cancer including lung, mouth, throat, stomach, colon and prostate cancers. What the public may not know, or fails to consider, is that nicotine isn't only a carcinogen, it is a highly toxic substance and it is natural – produced by tobacco. (In fact, nicotine was once used as a pesticide). Death does not occur after smoking a pack of cigarettes in a single day because the dose consumed is not high enough to approach an *acutely* toxic level; however, lower doses over the course of many years (chronic exposure) can be harmful.

Natural substances such as caffeine, salt, Vitamin D and gasoline are very acutely toxic. Similarly, many pharmaceutical drugs are also quite toxic and can be harmful if taken in large doses e.g. Aspirin and Tylenol. Table 1 (pages 15-16) is designed to put the acute oral toxicity of various chemicals into perspective. The reader should keep in mind that the lower the LD50 value, the more toxic the substance. Toxicologists do not calculate

LD50s in humans for obvious reasons, but from poisoning cases, the lethal doses of certain compounds have been documented. Where available, these are included in the table. Table 1 demonstrates that the idea that natural substances are safe and man-made substances are toxic is a misconception. Over the centuries, many natural substances have been used deliberately to cause death (e.g. the execution of Socrates using Hemlock brew).

The purpose of Table 1 is **not** to convey that pesticides are no more acutely toxic than Tylenol and salt, but to demonstrate that people should keep *their dose*, which in the case of pesticides is their *exposure*, as low as possible to all of these substances. Most people would never consider swallowing an entire bottle of Tylenol or a salt shaker full of salt. *They keep their dose to a minimum or, as in the case of pharmaceutical drugs, they abide by the label recommendations regarding dose. The same is true of pesticides – the label regarding such items as application rate, personal protective clothing etc. must be followed in order to use the products safely and reentry periods should be observed to protect bystanders.*

The other basic type of toxicity is chronic toxicity, which can result from long-term daily exposure to a chemical over the course of a lifetime (which in laboratory animals is 18-24 months depending on species – this equates to a full human lifetime). Several different chronic toxicity tests are performed which help to predict whether a pesticide will cause long-term health effects including cancer.

Animals are exposed to a range of dose levels of the chemical, usually through their diet, but occasionally through the skin or lungs, daily, for up to two years. The doses administered in a single study range from very low in some groups of animals, to extremely high in others. There is always a “control” group that is fed the untreated diet and housed under identical environmental conditions. During the study, animals are examined for physical and behavioural effects. At the conclusion of the study, external and post-mortem examinations are conducted and tissues are examined microscopically. The results from the treated and untreated groups of

animals are compared. The results indicate whether or not a chemical has the potential to be neurotoxic (toxic to the nervous system), carcinogenic (cancer causing), teratogenic (causes birth defects) or a reproductive toxin. Tests to determine mutagenicity (effects on DNA) are done in culture and also in live animals. Some of the mutagens we consume daily in small quantities include chemicals in coffee.

Chronic toxicity testing is extremely complex. Health effects *must* occur in the study or it is deemed invalid and must be repeated at higher dose levels. *All substances, natural or man-made, will cause health effects of some sort if given at a high enough dose.*

The purpose of the chronic study is to stress the animals' system sufficiently for effects to be seen. This allows the toxicologist to determine which organs are the target organs and to determine the highest dose level tested that will *not* cause health effects (a "safe" dose in the species tested). A minimum safety factor of

100 is then applied to this dose (e.g. the dose is reduced 100 fold, 10x to account for the study being conducted in animals not humans and an additional 10x to account for differences between individuals within a population) to obtain a dose level that is considered "safe" for human exposure. An additional 10x safety factor is invoked if there is evidence of increased susceptibility of young animals to ensure our children are protected (total safety factor = 1000 fold). A risk assessment is then performed by the PMRA to determine the exposure of the general public, bystanders and occupational workers to the new pesticide. Exposure values must be below the "safe dose" determined from the animal studies following implementation of the required safety factors or registration is not granted.

Turf Specific

PMRA reviewed the data on the products currently registered for use on turf and concluded that they could be applied safely without risking human health or the

environment (provided label directions are followed). Consequently, these products are registered. As part of their ongoing review program, PMRA is conducting re-evaluation of older pesticides that were registered prior to some of the newer study protocols and standards being required. Through re-registration, chemical companies will be asked to fill data gaps on older chemicals. These data will be reviewed and any products not meeting the standard will have their registrations revoked.

Since the exposure incurred by occupational workers, bystanders and the general public has been thoroughly studied for each registered pesticide and found to be well below any level of concern, the public's hysteria regarding their exposure to pesticides and risk to their health is currently not warranted from a scientific point of view. Pesticides can be used safely, provided label directions are followed; therefore, any pesticide ban approved by a municipality is really a political decision based on emotion and not one based on sound science. ♦



Supreme-Green™ TURF COVER

The **multi-purpose** turf cover ideal for natural turf environments such as baseball, soccer and football fields, etc.

BENEFITS

- accelerated seed germination • encourages root development • early spring green-up
- delays dormancy in fall • winter protection: reduces frost and ice damage • turf repairs
- available in any size

Coverttech
Fabricating Inc.

Buy Direct From the Manufacturer!

Call 1-800-837-8961

www.coverttechfab.com • sales@coverttechfab.com

Table 1: Toxic Hazards of Common Materials

Note: Acute toxicity is measured following a single exposure. Where human data are available, the dose presented is the *lethal dose* for adults unless otherwise noted. Lethal dose in mg/kg body weight has been calculated based on an average adult body weight of 65 kg. Acute oral toxicity from animal studies is assessed using the quantity required to kill half of a group of test animals when given orally (Oral LD₅₀); therefore, the *higher the LD₅₀, the lower the toxicity e.g. A larger quantity of a less toxic substance is required to cause harm. Compounds in **BOLD** type are natural in origin.*

LIST OF MATERIALS	LETHAL DOSE FOR HUMANS (from poisoning records; dose presented in mg/kg body weight where possible)	LD ₅₀ VALUES FROM ANIMAL STUDIES (mg/kg body wt unless otherwise stated)	REF.
PRIMO MAX		>5050 (rat)	a
HERITAGE		>5000 (rat)	b
ROUND-UP		>5000 (rat)	b
ALCOHOL (ethanol)	10-14 oz or 300-400 mL pure ethanol, or 600-800 mL 100 proof whiskey, if consumed in < 1 hr (3643-4860 mg/kg) ¹	13 mL/kg (rat)	c, d
KILLEX Lawn Weed Killer	8 oz or 227 mL (3751 mg/kg) ²	>5000 (rat)	b
ANTIFREEZE (Ethylene glycol)	100 mL = 100 g (1540 mg/kg) ¹	8540 (rat)	c, d, h
GLYPHOSATE (active ingredient)		5600 (rat)	e
RUBBING ALCOHOL (isopropyl alcohol)	250 mL (3021 mg/kg) ¹		c, d
DACONIL 2787		4200 (rat)	b
SALT	Lethal Dose for 1 yr old is 2 tbsp	3000-3750 (rat)	f, g, d
DUAL® 960 (herbicide)		2780 (rat)	b
DISINFECTANT (Lysol®, 7% O-phenylphenol)	10 g (2200 mg/kg)	2480 (rat)	c, d
HORIZON® Herbicide		2276 (rat)	a
AATREX NINE-0® (atrazine)		1600 (rat)	b
BANNER 130EC		>1550	b
ASA (Aspirin)	200 g (3077 mg/kg)	1350-1500 (rat)	c, d, g
DICAMBA (active ingredient)		1040-1707 (rat)	d, e
BLEACH	15-30 mL (child) (500-1000 mg/kg) ³		c
BATHROOM CLEANSER (Sodium phosphate 24%, eg. Comet®)	Approx. 50 g (769 mg/kg)		c
MECOPROP (active ingredient)		930-1166 (rat)	e
2,4-D herbicide formulations		600-764 (rat)	b, e

STA Scholarship Winners

CONGRATULATIONS ON YOUR ACHIEVEMENTS!

- John Peek, City of Mississauga, Ontario
2002 Turf Managers' Short Course
- Craig Hirschberger, Kitchener, Ontario
*2002 Ontario Diploma in Horticulture
(turf option)*

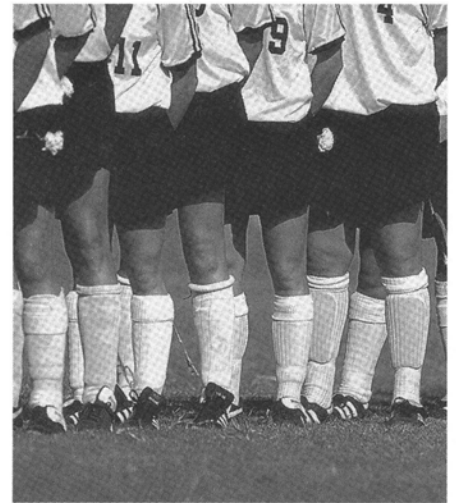


Pictured on the Left

STA member Howie Kumagai is awarded the Registered Recreation Facility Operator professional designation by ORFA at the recent Professional Development Program held at the University of Guelph. This achievement is a designation which formally acknowledges recreation facilities industry personnel who have met specific education and training requirements, have related work experience and who are committed to supporting and contributing to the integrity of the recreation facility profession. Our congratulations Howie!

Words of Wisdom

"Leadership is communicating people's worth and potential so clearly that they come to see it themselves." *Anonymous*



STA NEW MEMBERS

Welcome!

Jamie Worden & Kevin Jensen
Turf Care Products Canada

Bruce Norris
Town of Tecumseh, ON

Brian Jimmerskog
Country Day School
King City, ON

Lorne Allen
City of Peterborough, ON

Diane Ross & Andrea Smith
University of Toronto at
Mississauga, ON

Bob Cooney
City of Ottawa, ON

Carol Cormier
City of Toronto

Dave Charlton
City of Hamilton, ON

Dave Ellis
City of Regina, ON

Fred Ciccone
University of Toronto at
Scarborough

Peter R. Boyce & Robert Wright
City of Welland, ON

Terry Henderson
Town of Oakville, ON

DOL TURF RESTORATION LTD.

- Turf Drainage Solutions • Aerification (All Types)
 - Top Dressing • Overseeding
- Automated Laser Fine Grading of Tee Decks & Sports Fields
 - Golf Course Renovations
- Sports Field Construction & Reconstruction
- SportGrass™ • Permaline™

2365 Bowman St., Innisfil, ON L9S 3V6
Tel: (705) 431-0028 • Fax: (705) 431-0040
Mobile: (416) 728-2371 • Toll Free: 1-800-794-9664

e-mail: gdol@dolturfrestoration.on.ca

Member S.T.A. O.G.S.A. O.R.F.A.

SPORTS TURF SPECIALISTS

LIST OF MATERIALS	LETHAL DOSE FOR HUMANS (from poisoning records; dose presented in mg/kg body weight where possible)	LD ₅₀ VALUES FROM ANIMAL STUDIES (mg/kg body wt unless otherwise stated)	REF.
CREAM OF TARTER (tartaric acid)	30 g (462 mg/kg)		c
TURPENTINE	15 g (230 mg/kg)		c
PROZAC	200-400 mg (14-17 yrs) (4-8 mg/kg) ⁴	425-467 (rat)	i, j, k
2,4-D (active ingredient)		375 (rat)	b
CAFFEINE (coffee)	183-250 mg/kg 100 cups of strong coffee	355 (male rat) 247 (female rat)	c, f, d
TYLENOL (acetaminophen)	10 g (140 mg/kg)	338 (mice)	c, d
DURSBAN TURF INSECTICIDE		776 (male rat), 300 (female rat)	b
NICOTINE	40 mg (0.6 mg/kg = 1 drop = quantity in 2 g of tobacco or 2 cigarettes)	230 (mice)	c, d
GASOLINE	10-250 mL (112-2807 mg/kg) ²		c
MOTH BALLS (naphthalene)	2 g (31 mg/kg)		c
SODIUM FLUORIDE (fluorine)	5-10 mg/kg	35 (species not specified), 180 (rat)	c, f, d
ARSENIC (Arsenic trioxide)	400 mg (6.2 mg/kg)	15.1 (rat)	f, d
PARATHION	2 mg or 0.1 mg/kg (5-6 year olds) 120 mg/kg (adult male) 1.8 mg/kg (no age specified)	2 to 13 mg/kg (rat)	c, f, e, d
VITAMIN D		10 mg/kg	f
STRYCHNINE (Strychnine sulfate)	15-30 mg (0.2-0.5 mg/kg)	Approx. 5 mg/kg (rat)	c, d
TUBOCURARINE CHLORIDE	6 mg/kg	0.63 mg/kg (mice, i.p.)	c, d
BOTULIN (Clostridium botulinum) Food Poisoning	<0.000,014 mg/kg		g

References

- a) Internal Novartis/Syngenta Toxicology reports
- b) Material Safety Data Sheets, various manufacturers
- c) Dreisbach, RH (1983) Handbook of Poisoning, 11th Edition, Lange Medical Publications. Note: amount fatal for adult divided by 65 kg typical weight to get values in mg/kg
- d) Merck Index, Encyclopedia of Chemicals, Drugs and Biologicals (1983) 10th Edition, Windholz, M. Editor, Merck and Co. Inc., Rahway, N.J.
- e) The Pesticide Manual (2000), 12th Edition, British Crop Protection Council
- f) Ottoboni, A (1984) The Dose Makes the Poison, Vincente Books, Berkeley, California
- g) Hayes, WJ and Laws, ER (1991) Handbook of Pesticide Toxicology, Academic Press, Vol. 1, 2 and 3
- h) Emsley J (1994) The Consumer GOOD Chemical Guide: A jargon-free guide to the chemicals of every day life. W.J. Freeman Co., New York, pg. 291
- i) Personal communication between Syngenta Crop Protection Canada Inc. and Eli Lilly Canada Inc.
- j) Product Monograph for Prozac, Eli Lilly manufacturer, Feb. 21, 2000
- k) China Chemical and Pharmaceutical Co. Ltd., Taiwan

Footnotes

1. Calculated using fatal dose converted to mass using density from Ref. d and body weight of 65 kg.
2. Calculated using fatal dose converted to mass using density from Ref. b and body weight of 65 kg.
3. Calculated assuming density of bleach containing 3-6% sodium hypochlorite in water is approx. 1, and 30 kg body weight.
4. Assuming 50 kg body weight.

COMING EVENTS

July 17-19

Ontario Parks Association
50th Annual General Meeting & Summer Conference, Brantford, Ontario, Information: vhergott@citybrantford.on.ca

August 13

Guelph Turfgrass Institute
Summer Research Field Day
Guelph, Ontario
Information: (519) 767-5009

August 20

Ontario Turfgrass Research Foundation
Fundraising Golf Tournament, Royal Woodbine Golf Club, Information: (416) 234-0425 (Cindi Charters)

September 12

STA Annual Field Day
see pages 8-9 for info

October 23

STA/ORFA Educational Workshop
IPM Cultural Practices and Equipment, Mold-Masters SportsPlex, Halton Hills, Ontario
Info: (416) 426-7062 (ORFA) or (519) 763-9431 (STA)

October 17-18

Landscape Ontario Horticultural Trades Association
Garden Expo
Toronto, Ontario
Information: (905) 875-1805

January 15-17, 2003

Landscape Ontario Horticultural Trades Association
Congress 2003
Toronto, Ontario
Information: (905) 875-1805

January 21-23, 2003

Ontario Turfgrass Symposium
Regal Constellation Hotel
Toronto, Ontario
Information: (519) 767-5000

February 3-28, 2003

University of Guelph
Turf Managers Short Course
Guelph, Ontario
Information: (519) 767-5000



ORFA/STA Joint Education Workshop

OCTOBER 23, 2002, MOLD-MASTERS SPORTSPLEX, HALTON HILLS

AGENDA	ACTIVITIES
7:00 – 8:00 am	Corporate/Vendor Display Set-up
8:00 – 9:00 am	Registration/Refreshments & Meet Exhibitors
9:00 – 10:30 am	Session #1: Integrated Pest Management
10:30 – 11:00 am	Refreshment Break
11:00 – 12:30 pm	Session #2: Maximizing Your Equipment
12:30 – 1:00 pm	Lunch

Integrated Pest Management

As communities become more aware, more concerned and wanting more of a say in the care and control of their environment, municipalities are having to answer some tough questions. Whether the driving force is political or ecological, the debate will take place and resolutions will be reached. Where does the quality of turf fit in? Through proper turf management techniques, you can give the grass a fighting chance against weeds and insects. Chris Mark, Assistant Director of Operations, Parks and Recreation Department for the Town of Oakville and Past President of the Sports Turf Association, will address alternatives to chemical weed and insect control.

Maximizing Your Equipment

When starting up an IPM Program, the investment in equipment will seem large. However, by getting to know the equipment available and what it can do year round you can maximize your budget dollars by multi-tasking your purchases. With so many types of aerators, topdressing and overseeding, which one is right for you? Know the task, know the equipment, know its abilities. In this session, Jane Arnett-Rivers, Supervisor of Parks for the Town of Oakville and Past President of the Sports Turf Association, will look into the various options available.

Display Information

In addition to delegates, both ORFA and STA Corporate Members are cordially invited to attend the Regional Information Session on a first come, first serve basis to display products and/or services. NOTE: Please keep in mind that this is a parks and sports turf session and you should consider this to determine whether or not your company's products/services will fit the mix.

Registration Information

Further details and a registration form may be obtained at www.orfa.com (*Calendar*) or by contacting:

Ontario Recreation Facilities Association Inc.
402-1185 Eglinton Avenue East, North York, ON M3C 3C6
Phone: 416.426.7062 Fax: 416.426.7385 Email: info@orfa.com

or

Sports Turf Association
328 Victoria Road South, Guelph, ON N1H 6H8
Phone: 519.763.9431 Fax: 519.766.1704 Email: sta@gti.uoguelph.ca

New

Quick Slit Seeder



- Quick germination in higher yields.
- Easy to calibrate.
- Minimum surface disturbance.
- Sowing varieties include (but not limited to) All types of seed, Grain, Pesticide & Fertilizer Prills, Pelletized Lime, Diazinon 5.
- Coverage Rates: 4lbs - 500lbs/acre.
- Ensure seed/soil contact while maintaining constant seed depth.
- Save 25% of seed with accurate calibration.

Seeding is Believing

The Quick Slit Seeder follows the ground contours accurately and plants seeds at a constant depth in its own prepared mini seedbed. This unit is also a cultural tool in that it acts as a grass root pruner by cutting or breaking the grass plant roots. For the survival of the grass plant, it must immediately put all of its resources into growing new roots, resulting in stronger plants with better root structures.



BANNERMAN

41 Kelfield Street, Rexdale, Ontario, Canada
 CDN 1-800-325-4871 USA 1-800-665-2696
www.sportsturfmagic.com



Turf Drainage Systems Ltd.

Turf Drainage Professionals

- Complete Design and Installation
- Specializing in Slit Drain Systems for Sports Fields and Golf Courses
- Drainage Specialists for over 25 years
- Automatic Laser Controlled Equipment
- Guaranteed to Provide the Results You Need

Contact us:

- 33839 Saintsbury Line, P.O. Box 237, Lucan, ON N0M 2J0
- E-mail: tdsturf@on.aibn.com
 - Website: www.tdsdrainage.com
 - Office: 519-227-0731 • Mobile: 519-878-8918
 - Fax: 519-227-1670

Proud Members of CGSA • OGSA • STA

Balancing Nature

Managing Water

Designing for Results

Leading Edge
 Design &
 Consulting



RAIN BIRD

Hunter

1.800.263.4112

www.vandenbussche.com
vbidesign@vandenbussche.com

POUR **fertilec** l'environnement, un choix de vie ...

PROGRAMME DE FERTILISATION «COMPLETE» avec **HARMONY**
adapté aux conditions environnementales
québécoises et canadiennes.

DES FORMULATIONS DE PREMIER CHOIX
pour parcs et terrains sportifs.

Le programme Harmony, nous le préparons pour vous...
avec des formules homogènes et 100% adaptées à vos besoins.
Formules «BRIDGE», mélange d'engrais minéraux (3% à 7%)
combiné au meilleur de l'organique soit fumier de poulet,
algues, farine de coton, etc.

Produit efficace par température froide 45°F et plus.

Formules naturelles et biologiques disponibles :

Biodiversité et OMRI approuvé.

Des variétés de gazon ou de graminées écologiques sans
entretien et acclimatées à vos besoins.

FERTILEC, LA RÉPONSE À VOS TRACAS D'ESPACES VERTS.

Fertilec distribue plusieurs produits de compagnies impliquées
dans la récupération et le recyclage.

Cascades Re-Plast - Sol Plastiques - Compost Québec, etc.

Vous recherchez un produit, appelez-nous, nous serons en
mesure de vous le trouver chez un de nos fournisseurs attitrés.



“COMPLETE” FERTILIZATION PROGRAM with **HARMONY**
adapted to growing conditions in Quebec and Canada.

SELECT FORMULAS FOR PARKS AND PLAYING FIELDS.

The Harmony program is custom-prepared for you...
With consistent formulas fully adapted to your needs
“BRIDGE” mix formulas of mineral fertilizers (3% to 7%)
combined with the best organic fertilizer made of chicken
manure, algae, cotton flour, etc.

Effective at temperatures of just 45°F or more.

Natural and organic formulas available:

Biodiversity and OMRI approved.

With maintenance-free varieties of lawn or grass,
adapted to your climate,

FERTILEC HAS THE SOLUTION TO YOUR GREEN SPACE NEEDS.

Fertilec is a distributor for several companies
involved in recovery and recycling.

Cascades Re-Plast - Sol Plastiques - Compost Québec, etc.

If you're looking for a particular product, give us a call,
we can find it for you from one of our certified suppliers.

fertilec, where the
environment,
is a life choice...

 **fertilec** Itée/Ité

1260, chemin Filteau, Saint-Nicolas (Québec) G7A 2M1

Tél. sans frais : 1 888 831-1085 ext. 22

Télé. sans frais : 1 888 836-1915

gosselin@fertilec.com • www.fertilec.com