

SPORTS TURF MANAGER

... for safe, natural sports turf

SPRING 2003 • VOL. 16, NO. 1

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SPRING PLANTING PREP...

Every two years, the Sports Turf Association compiles a table of grass seed types available from major seed companies around the province. This year, we've also included a handy chart listing the most common characteristics of cool season turf grasses. Which will do best in shade, tolerate wear and have the lowest mowing frequency? See pages 17 and 18 for further details.

Controlling Turf Diseases Daniel Tremblay

THE ROLE OF SILICA IN IMPROVING TURF'S NATURAL DEFENSES

Fungal diseases are a regular turf problem for golf course superintendents. And the problem is made even worse by often appearing during the summer season when the course is at its busiest. Control methods are presently few in number, basically boiling down to the use of fungicides. Studies presently underway at Laval University's Horticultural Research Centre, however, are working on alternatives to pesticide use.

In spite of all the money and effort invested over the last few years in research into the biological control of turf diseases, few new solutions are presently available that golf course superintendents could actually use. Improved turf care and the use of new disease-resistant cultivars can help prevent the appearance of diseases, but are not always sufficient.

During the summer, heat and humidity stimulate the growth of several fungi capable of attacking turf grasses. At the same time, golf turf is undergoing intense maintenance and suffers from several forms of

severe stress. Among them, heat, drought, predatory insects, foot traffic from golfers, and frequent low mowings not only make turf more vulnerable to various infestations, but also wound the plants leaving the door wide open to pathogens. It is the combination of these factors that explains why diseases are so common during the summer months. → page 9

Below: Plants were sown in University of Guelph greenhouses. Half were given fertilizer without silica while the other half received fertilizer with silica. Results obtained were conclusive. See page 9 for more...

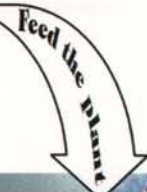


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328 Victoria Road South, Guelph, ON N1H 6H8
Tel: (519) 763-9431, Fax: (519) 766-1704
E-mail: info@sportsturfassociation.com
Web: www.sportsturfassociation.com

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EDITORIAL COMMITTEE

Jane Arnett-Rivers, Andrew Gaydon, Lee Huether and Paul Turner

PUBLISHER

New Paradigm Communications
R.R. #8, Owen Sound, ON N4K 5W4
Tel. (519) 371-6818, Fax: (519) 371-5789
E-mail: joy@npc-solutions.com

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STA OFFICE HOURS

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

The President's Desk

PAUL TURNER



Happy Spring!

Hello and a 'warm' welcome to the membership. We have endured quite a chilly winter season and I, for one, will not miss its passing! I am sure spring is just around the corner and that is good news for us all.

Ontario Turfgrass Symposium

It was another successful OTS and a big thank-you should go out to Pam Charbonneau for co-ordinating the excellent speaker program and to the new event coordinator Remo Petrongolo and his staff for making sure things ran smoothly.

Dates for the 2004 OTS are set for January 20-21, so book it in your day planners to attend. Program content is currently being reviewed and you should look for a few more municipal-related topics next year. There is a new group of partners for OTS 2004. As you are aware, the Golf Course Superintendents have decided to move on and we welcome the Ontario Recreation Facilities Association (ORFA) into the new partnership. ORFA brings fresh ideas as well as a rather large membership group. There will still be a program for golf course superintendents as well as sports turf managers and accreditation credits will still apply to all those superintendents and assistants who want to be a part of OTS.

STA Annual Meeting

Our annual breakfast meeting at OTS had the largest turnout ever (at 7:30 am!). We're not sure if that means we are doing a good job or a bad one but it was great to see all those people attend.

A warm welcome to the newest board members for 2003, Jamie Worden from Turf Care Products and Gord van Dyk from the University of Toronto, Scarborough Campus. We are glad to have

two knowledgeable turf professionals like yourselves on our board and we look forward to your input.

A sad goodbye was said at the AGM to long serving member and founder Mike Bladon and board member Bill Campbell. Your expertise and knowledge will be missed gentlemen! Thanks again for all you have done for the association and we, as a board, look forward to continuing to improve the association for our members.

Members, please update your electronic address book ...

Our new email address is:
info@sportsturfassociation.com

New Business

Annual Field Day plans are being laid for fall 2003 and we look forward to presenting the dates and location to you in the near future. We will be holding the field day in September again as this seemed to fit well with most people's schedules. Stay tuned for more details!

With the costs of doing business continuing to rise, it was necessary to increase the price of STA memberships for 2003. The new rate for initial members is \$135 with the additional member price rising to \$35. I think you would all agree that the membership fee is still very reasonable and we will continue to bring you a top quality newsletter and field days that you have come to want and expect.

We have implemented the first phase of the new web site and I think you will agree that it is coming along quite nicely. We continue to strive to make it more appealing and we welcome suggestions on content and layout. Visit us at www.sportsturfassociation.com and let us know what you think! Have a great spring!

News Clippings

ALLERGY-FREE GRASS PRODUCED IN AUSTRALIA



Researchers at the Co-operative Research Centre for Molecular Plant Breeding at La Trobe University in Melbourne, Australia, have developed a genetically modified, allergy-free grass.

After five years of research, the research group has de-activated the gene in a species of perennial ryegrass responsible for inducing allergic reactions.

Perennial ryegrass, typically found in lawns, golf courses and other sports fields,

is one of the most common triggers of hay fever and asthma.

Program leader German Spangenberg explains the benefits of this new grass will impact individuals worldwide. "Hay fever and seasonal allergic asthma are key environmental diseases that affect a large portion of the population in temperate climates and grass pollen is a major contributor to that."

— *GreenMaster*, Vol. 38(1), Feb. 2003

Request for Proposal

The International Society of Arboriculture - Ontario Inc. (ISAO), is seeking proposals to replace their administrative functions and Executive Director (ED).

ISAO is a dynamic, professional not-for-profit organization serving approximately 600 members across Ontario. In addition, a certification program exists which serves almost 500 arborists, not all of whom are members. There are standing volunteer committees, an annual three-day educational conference, workshops, an exhibitor booth at industry shows, a newsletter (published 6 times/yr), web site and book sales (approx. '02 gross over \$30,000). A typical week would have the "office" open three days with longer hours through January, February and November. The Executive Director has in the past carried out most of the administrative operations. New innovative ways of carrying out these functions are encouraged. The office, including part-time clerical assistance, operates currently on approx. \$22,000 per year plus traveling expenses.

Reporting to a Board of Directors, the ED will display contagious enthusiasm, have good diplomatic and communication skills, exhibit vision and leadership skills, be a good organizer and be able to work well with a minimum of direction. The ED position is considered part-time; however, at certain times of the year, full time attention is required. Some limited travel is involved. The position would be ideal for someone recently retired from the "green industry." The incumbent will be expected to provide their own workspace, which may be located at the candidate's home or office. The office operates a budget 'flow through' of approximately \$400,000. An inventory of books and pamphlets must be maintained. The Board will also consider alternate proposals for only the administrative operations of the society, i.e. through partnerships with existing organizations or businesses, etc., and/or only the 'ambassador' Executive Director functions. Any other proposals that include the above requirements will be considered. Start date is August 2003.

Reply to: A. Fyfe, Allan Fyfe Equipment,
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INTERNATIONAL SOCIETY
of ARBORICULTURE



Odds and Ends

2003 STA Membership Fees

Thank-you to all members renewing in 2003! Invoices for membership fees will be mailed at the end of March and are due on or before May 1. Please take a moment to verify your contact information as it appears on the memo accompanying your invoice. The Membership Roster is compiled from this information.

Quotes of the Month

The first day of spring is one thing, and the first spring day is another. The difference between them is sometimes as great as a month.
Henry Van Dyke

An optimist is the human personification of spring.
Susan J. Bissonette

Membership Plaques

Now available! Sports Turf Association Display Membership Plaque in executive engraved walnut. Just \$50 plus S&H. Contact Lee Huether at the STA office to order.

Summer 2003 Submissions

If you have something you'd like to submit for the next issue, please forward it to the STA office by April 25, 2003.

Editorial Content

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

Voice Your Opinion!

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

Coming Events

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

March 4, 11 & 18

Guelph Turfgrass Institute
Pesticide Applicators Preparation
Course, Guelph, ON
Information: (519) 824-4120 x 2501

March 12-16

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

March 18-20

Atlantic Turfgrass Research Foundation
Atlantic Turfgrass Conference & Trade
Show, Halifax, NS
Information: (902) 861-1922
Email: barbyorke@ns.sympatico.ca

March 26 & 27

Ontario Parks Association
47th Annual Educational Seminar
& Explorations Trade Show
Hamilton, ON
Information: (905) 524-3535
Web: www.opassoc.on.ca

April 27-May 2

Ontario Recreation Facilities
Association 48th Annual Professional
Development Program
Guelph, ON
Information: (416) 426-7062
Web: www.orfa.com

Focus on OPA's Annual Seminar

This year's program (March 26-27) offers a diverse list of topics designed to provide much needed professional development, networking and information sharing to support delegates in their work as they continue "Protecting Tomorrow Today"® across the province of Ontario.

Educate, Tune Up Your Mind will offer insightful and entertaining keynotes and will update and animate delegates by addressing issues such as ...

- Responding to Poor Air Quality
- Insects of Destruction
- Succession Planning
- Revisions to Ontario Cemeteries Act

- Managing Your Park Assets
- Water Conservation
- Floriade: The Ultimate Flower Show
- Solid Waste Diversion
- Illegal Dumping in Parks
- Plant Health Care Strategies
- Revisions to Playground Standards
- Smart Green Fleets
- What's Up With Turfgrasses
- Naturalization Projects

Also plan to attend *Explorations 2003 Trade Show* and view the products and services showcased by companies and organizations involved in parks, grounds and recreation facilities.

To receive a program brochure, or to obtain more information on these events, please contact Ontario Parks Association.

GET ON THE LIST!

Contact the STA if you have an event you'd like to advertise in the next issue of the *Sports Turf Manager*.



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Perhaps the highest compliment we can give to an individual or to an organization is to say that it is professional. But what does that mean? In the golf world, one definition revolves around payment: professional golfers get paid, amateur golfers do not. But that definition does not apply when talking about people doing their jobs and organizations offering services to customers.

In this article, we are going to look at this issue from two perspectives, from that of the manager or owner, and from the point of view of individual employees. What does professionalism mean, and how do you convey a professional image?

Management Perspective

If you manage a facility or operate a business, how do you let the world know that you are running a professional operation? Basically, managers have to do two things: provide direction to staff and learn to think like a customer. Let's take a look at these two requirements more closely.

Provide Direction

1. Set standards. What kind of service would you like your customers to receive? This is far too important a question to be left up to individual employees to answer in a variety of ways, yet that's often what managers do.

Managers sometimes expect their employees to know intuitively what constitutes a professional approach to work. How many times should the phone ring before it is answered? How should customers be greeted? What should you do if the phone rings while you are helping another customer? These are just a few examples of the types of questions which managers need to address in order to provide direction to their employees.

Have you ever heard a person say something like, "When you go there, don't speak to Mary, ask for Fred. He's much more helpful." If it makes a difference to whom you talk, that's usually a sign that the operation does not have consistent service standards.

General statements such as "be nice to people" or "give great service" are a start but it's much more helpful to employees to have specific direction and definitions of what is expected of them and what the public can expect when they deal with a member of your staff.

2. Recognize and teach service skills. The ability to maintain a consistently professional and positive approach to work is a special skill. Not everyone is good with numbers or at writing reports. The same is true of professionalism. It is not easy to continue smiling or remain pleasant through an entire day's work. It's not easy to deal with difficult people (and some of them are very difficult) and not get upset. It requires very special skills to turn an angry, complaining person into a satisfied customer who will return with a more positive attitude.

When placing employees in front line positions, managers should look for people who seem suited to customer service work. And, most important, managers should ensure that employees receive the training they need to enable them to do their jobs properly. Most managers would never dream of hiring someone to operate a piece of equipment without first making sure that the person either knew how to operate it or was given training. People are frequently hired for front-line, customer contact positions with no training – just a vague expectation that somehow they intuitively will know how to handle every situation that occurs.

Organizations noted for their professionalism place a high value on employee training, both during orientation and as an ongoing practice. Everything from the

basics, such as positive communication techniques and telephone skills, to more complex issues such as diffusing customer anger are important for staff to team.

3. Value your front-line staff. If customers are the most important part of any operation, then the staff who work directly with customers are also very important people.

Ironically, it is usually the lowest paid, lowest seniority, often part-time or seasonal people who have the greatest customer contact. Except in very small businesses, the most senior people are usually the furthest removed from day-to-day customer contact.

It is essential for managers to show their front line staff how important they are to the success of the organization. There are many ways to recognize and reward positive attitudes and professional work and to show people that you value what they do. Management's attitude toward employees translates directly into employees' attitudes towards customers. Employees must genuinely appreciate the importance of making each interaction with customers a positive one and they must understand the impact that their actions have on the reputation of the organization.

Think Like a Customer

If you want to be perceived positively by the customer, it is essential to start thinking like your customers. They often see your operation from a very different perspective. In general, customers tend to evaluate six things. What does professionalism look like to your customers? Ask yourself these questions.

a) Physical environment: what does your operation look like? This includes things like offices, buildings, trucks, equipment, signage, grounds, parking – just about every element of your physical set-up. Do things look well maintained, clean, organized, neat?

b) Interpersonal interaction: what is it like dealing with your staff? Are they pleasant, knowledgeable, positive? Do they give the impression that they know what they are doing and have been trained?

c) Information: how easy or difficult is it to get information? How many different people do you have to talk to get answers? Are you ever told, “I don’t know, that’s not my department”?

d) Systems, processes, procedures: how easy or difficult is it to do business with you? Do you reserve tee times? How long do you wait to get a phone call returned?

Do you take debit? Do your brochures look good and is everything spelled correctly?

e) Deliverables: what is the quality of the product or service which you provide? Does the field look good? Are the greens in good shape?

f) Perceived value: for what it cost, what is my impression of the overall value of what I received?

Individual Perspective

What does it mean for an individual employee to be “professional”? When asked that question, most people give these answers.

- Knowledgeable and competent: you have to know what you are doing.
- Ethical: it is difficult to say someone is professional if they are not honest.
- Confident: in addition to looking confident, it is important to instill confidence in others.

• High standards: professionals always try to do the best possible job; “good enough” is never good enough.

• Communicate: it’s not enough to be knowledgeable, it is also important to be able to explain things to the average person without sounding condescending.

• Work under pressure: it’s one thing to be knowledgeable and confident and positive on the good days, but can you do it on the bad days? That is the essence of professionalism. Too many people use the fact that they’re having a bad day as an excuse for less than professional behavior.

Projecting a Professional Image

How do you let the world know that you are a professional and that they can count on you? Here are some ideas.

1. Communication skills: According to some research studies, over 90% of the image we convey to others is conveyed through body language and tone. Avoid using body language and tone which could

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be perceived as sarcastic or uncaring. Some examples might include rolling your eyes, frowning or scowling, shrugging your shoulders as if you don't care, sighing, using a tone of voice which could be interpreted as condescending or impatient. Remember to stand up straight (posture counts!), smile, make eye contact, and generally look like you are happy to be doing the job you are doing and happy to be serving the customers.

2. Use positive language: There is a real art in learning to use positive words rather than negative ones. Try to avoid as much as possible using words such as *can't*, *don't*, *won't*. They give the impression that you are trying to dodge responsibility and that you really are not interested in working with the person. Try to get into the habit of using positive words instead. So, instead of saying, "I can't answer that," try saying "What I can do for you is put you in touch with Rob, he'll be able to answer that for you." Or instead of saying, "I don't know, I'm new here" try saying "Let me check on that and get right back to you."

3. Handle difficult situations in a competent, professional manner: There will be difficult days when things don't go right and people get upset. Knowing what to do and say when people get upset is an essential skill. This is a complex issue and the best recommendation is to learn as much as possible about how to handle various situations. There are lots of courses, books and videos available on the subject – check out the library, local college, or your own organization's training programs. If none seem to be available,

ask your manager about having an in-house course.

Here are some basic tips. The natural human tendency when someone brings us a problem is to become defensive. This is absolutely the worse thing you can do. Saying things like "It wasn't me," or "I didn't do it" just make people angrier. Always focus immediately on the problem and what you are going to do about it.

Don't take it personally. The person is not angry with you, they are angry with the situation. You are the target, not the cause. Saying something like, "Just hang on a minute, you can't yell at me like that" is simply an invitation to turn things into an argument between the two of you. Again, focus on the problem not the person.

Some people can complain and still remain civil. Others can get downright rude and start shouting and swearing. You are not a punching bag and don't have to take abuse but it is never okay to start yelling and swearing back. That is unprofessional. Don't get sucked into playing the rude person's game.

4. Maintain a professional focus in everything you do. Your professionalism is measured not only by what you say but in how you conduct yourself as you go about your day's work. Keep your office or work area neat and tidy. Papers and tools spread all over the place don't create a very positive impression. If you have voice mail, keep it up to date by changing your message every day and returning calls promptly. Treat everyone with whom you come in contact with respect. Don't fall into the trap of "sizing" people up and

deciding what service they deserve. True professionals do their very best for every situation and every person with whom they come in contact. Finally, honour commitments. If you say you will do something, then do it.

5. Project a professional appearance and demeanour. This includes using appropriate language (no swearing, avoid slang) and body language (watch your posture). Grooming and personal appearance are important as well: hair combed, clothes clean and neat. If you are given a uniform to wear, then make sure it is kept in good condition. If you can wear your own clothes to work, the general rule of thumb is this: if you want to be taken seriously and respected, then look like you deserve to be. Golf course dress codes are great guidelines for what looks professional: shirts with collars, real shoes (not sandals), no cut-offs, no slogans on shirts, hats on straight, etc.

Professionalism has nothing to do with academic credentials, years of experience or job title and function. It is the way in which you conduct yourself and your approach to the work you do. Whether you are a business owner, a facility manager, a full time employee or a seasonal employee hired for the summer, you can let the world know you and your operation are professional. ♦

About the author. Lynda Pinnington is a partner of Pinnington Training & Development, a Cambridge, Ontario based firm which specializes in the design and delivery of skill-based development programs for business, industry and publicly funded organizations. She is a highly regarded facilitator and conference speaker.



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Cover Story Continued... The Role of Silica in Controlling Turf Diseases

DANIEL TREMBLAY, MASTERS STUDENT AT LAVAL UNIVERSITY, DISCUSSES CURRENT TURF RESEARCH

Golf Turf is Unique

Fortunately, plants have the ability to defend themselves against harmful fungi. They are, in fact, usually extremely good at preventing fungal colonization. Among others, their defense arsenal includes thickened cell walls and the production of compounds that are toxic to harmful fungi. These means are usually highly efficient. However, golf turf, already highly stressed, is particularly vulnerable and therefore less efficient at preventing fungal infestation.

One avenue of research that is worth exploring is developing and improving the natural defenses of turf grasses. It would also be interesting to look into increasing the speed with which the plants deploy their defense arsenal and into improving the intensity of their defense response to aggressions. Over the last few years, various research teams have noted that adding silica to the mineral nutrition of certain plants decreases the incidence of several fungal diseases.

What is Silica?

Silica is a mineral element, much like carbon, nitrogen, and calcium. It is an element that is found in great quantities on the surface of our planet and is, in fact, the second most abundant element after oxygen. Concrete, sand and glass are silica polymers. But silica is insoluble and therefore cannot be absorbed by plant root systems. It is therefore important to add

it in a soluble form so plants can absorb it. Since silica is not considered an element that is essential to plant nutrition, it is generally omitted from current fertilization programs. With more and more observations that silica has the potential to decrease the frequency of disease in several types of culture, it would seem worthwhile to include silica in regular plant fertilization situations.

For example, European growers of greenhouse cucumbers and roses who apply daily doses of silica report a decrease in mildew (*Sphaerotheca* sp.), a foliar fungal disease common in greenhouse

Since silica is not considered an element that is essential to plant nutrition, it is generally omitted from current fertilization programs.

production. Other beneficial effects have also been observed in the culture of certain other types of grass. Rice producers in the southern United States, for example, use silica as an amendment and are able to reduce the appearance of several diseases that decrease their harvest such as rice blast disease (*Pyricularia oryzae*). Other than disease resistance, leaves of plants fertilized with silica stand more upright, which improves light absorption and thus increases yields. Also silica accumulates in cell walls, allowing a general strengthening of plant tissues and, therefore, of the entire plant.

Researching Silica in Turf Culture

The goal of this research project, lead by Laval University in collaboration with the University of Guelph, is, in the first phase, to verify that silica actually is absorbed and translocated by turf grasses. The second phase attempts to determine the effect of silica on fungal turf diseases both in greenhouse experiments and in field tests, more precisely on golf course greens and fairways. Finally, the research should help make it possible to improve the knowledge of turf defense mechanisms and to understand the effects of silica on plant defense systems.

The grass chosen for the project was bentgrass (*Agrostis palustris*), the species most commonly used in golf greens. The first phase consisted of verifying that bentgrass does absorb silica. To begin with, plants were sown in University of Guelph greenhouses. After a week of growth, half the plants were given a liquid fertilizer without silica while the other half received a liquid fertilizer with silica. The plants were fertilized three times a week.

The results obtained were conclusive. The plants receiving fertilizer enriched in silica contain a very large amount of that

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GUIDE**



Top: Tests are presently underway in experimental plots on the greens and fairways of two golf clubs in the Guelph region. **Above:** Experimental plot at the Guelph Turfgrass Institute of the University of Guelph. Photos by Tremblay.

element in their aerial parts compared to plants not receiving silica.

The goal of the second phase of the experiment, on which the research team is presently working, is to determine whether the absorbed silica has an effect

on the incidence of fungal diseases such as dollar spot, caused by *Sclerotinia homoeocarpa*, and pythium blight (*Pythium* sp.). The results obtained up to now indicate that the addition of silica to turf fertilization delays the appearance of symptoms and, in some cases, decreases the incident of disease. Tests are presently underway in experimental plots at the University of Guelph and on the greens and fairways of two golf clubs in the Guelph region (Guelph Lake Golf and Country Club and Victoria Park Golf Course) in order to confirm the results

obtained under controlled conditions.

The last phase of this experiment consists of studying how silica acts in turf disease resistance. The interest in the role of silica in decreasing the incidence of disease is recent. The first hypotheses considered that the strengthening of plant cell walls (limiting the penetration of the pathogen) was the only role silica played. However, over the last few years, another role is coming to light. Studies carried out at Laval University by the team of Dr. Richard Bélanger suggest an entirely different means of action: it appears silica stimulates the plant's own defense mechanisms and thus make it more capable of defending itself against the aggressions of pathogenic fungi.

When attacked by a pathogen, the response of plant cells seems to be far superior when they have undergone previous treatments with silica. It is these defense strategies that still have to be identified and quantified in order to better understand the inductive role of silica in plants. Similar studies have been carried out on cucumbers, but so far no other study has been done on turf grasses and silica. This research project is therefore innovative and should help point out the defense compounds of bentgrass during attacks by pathogens as well as verify the effect of silica on the production of these compounds.

When Will Results be Available?

Complete results should be known by next summer. Other than their contribution to the advancement of scientific knowledge, the results could provide an interesting tool to golf course superintendents. Eventually silica might well be integrated into turf maintenance programs as a means of reducing the use of pesticides, notably fungicides. ♦

— Volume 24 (6), Québec Vert,
September 2002

About the author. Daniel Tremblay is an agronomist and a student working on his Masters Degree in Plant Biology at Laval University. He wrote this article in collaboration with Dr. Julie Dionne, a professor specializing in turfgrass management at the University of Guelph, and Dr. Richard Bélanger, a professor and phytopathologist at Laval University's Horticultural Research Centre.



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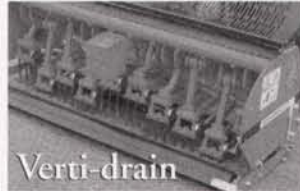
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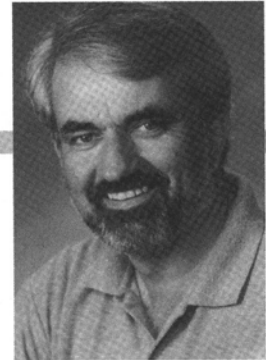
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Municipal Integrated Pest Management Accreditation

JOHN HOWARD, EXECUTIVE DIRECTOR, ONTARIO PARKS ASSOCIATION



According to Health Canada, "Integrated Pest Management (IPM) is a decision-making process that uses all necessary techniques to suppress pests effectively, economically, and in an environmentally sound manner to sustain healthy landscapes." Integrated Pest Management was originally developed for agriculture, but has been successfully applied to almost every field where pest management is an issue.

An integrated approach will employ prevention techniques wherever possible to minimize the impact of pest problems, by altering, whenever possible, conditions that promote pest populations. Plant Health Care (PHC) is an integrated approach that incorporates all the best horticultural practices to ensure that the best plants are chosen and through proper planting and maintenance techniques, pests and their related effects are minimized.

Benefits

Interestingly, Ontario municipalities have reduced pesticide use by significant amounts over the last 10 to 15 years. Much of this reduction was accomplished through the implementation of IPM or PHC programs. The multiple, long-term solutions provided through IPM/PHC promotes the use of the latest techniques and materials. Pesticide reduction is also achieved and environmentally, the application of any compound, natural or synthetic, when it is not necessary can

upset the balance of nature. Pests have developed resistance to certain chemical compounds. IPM/PHC options reduce the chances of pesticide resistance and enable pest managers to control pests that have developed resistance through alternative products and measures. The decision making process that is an essential component of these programs is guided through the establishment of pest population thresholds. Using alternative strategies for pest control reduces pesticide applications.

Background

The horticulture industry, represented by numerous associations, agencies and organizations, recognized the need to formalize IPM/PHC principles and practices and are instituting the IPM Accreditation Program which will recognize IPM practitioners through a qualification program and adherence to a code of practice. The elements of the IPM Accreditation include adherence to the Code of Practice, which essentially is a list of guidelines established to describe what is expected of accredited companies or organizations and

creates a common ground approach.

Initially, this approach was seen as only a benefit to the commercial lawn care industry; however applications are recognized in other areas including structural pest control and on public lands. A municipal working group, facilitated by the Ontario Parks Association, has been meeting since last May to develop IPM accreditation for parks, forestry and other applications. Subtle differences in the approach to IPM between various sectors of the industry provide the working group with challenges as it investigates the opportunities IPM Accreditation will provide to the public sector. IPM Accreditation is seen as the most viable alternative for municipalities considering the creation of pesticide by-laws.

Participants

The Municipal IPM/PHC Working Group has endorsed a "parks and open space" specific "Code of Practice" to standardize the municipal approach to IPM and PHC. The working group, centered in the Golden Horseshoe area, has



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invited representatives from various cities, towns and organizations to participate. To date the following agencies are represented:

City of Burlington, City of Cambridge, City of Hamilton, City of Windsor, Town of Oakville, Town of Halton Hills, City of Mississauga, City of Toronto, City of Brampton, The Ontario Parks Commission, Parks and Recreation Ontario, International Society of Arboriculture, Guelph Turfgrass Institute, OMAF, Landscape Ontario and the Ontario Parks Association.

Working Group Objectives

The main objective of the Working Group is to promote a standard approach to IPM/PHC through the accreditation process. Representatives of the various agencies have been exploring and developing municipal IPM/PHC principles and practices and sharing their experiences and approaches in this area. Information on municipal IPM/PHC Accreditation has been distributed to provincial politicians,

seeking support for a provincial IPM/PHC Accreditation process. A province-wide approach to pest control issues is preferred, as opposed to a patchwork of inconsistent, and some say unenforceable, municipal by-laws.

Initiatives to Date

The Working Group has reviewed the industry's version of the Code of Practice and modified it to make it more applicable to parks, grounds and public space operations. Information on the existence and activities of the group has been communicated to various ministries within the provincial government, along with information on the benefits of IPM/PHC and the Accreditation Program. The group has also attempted to liaise with other organizations dealing with pest control related issues.

The Municipal Working Group is investigating the development and production of an IPM/PHC information brochure as a vehicle to disseminate information on the latest pest management

techniques and practices. A "Municipal IPM/PHC Tool Kit" is also being considered to provide answers to commonly asked questions. Members are researching available case studies on IPM/PHC applications from municipalities across the province to determine past successes and challenges.

Future Direction

The Working Group is gradually expanding and eventually would like to include participation from across the province. The continued promotion of IPM/PHC through education, communication and accreditation is important in assisting municipalities with IPM/PHC programs.

The Working Group will continue to supply input into the IPM/PHC Accreditation process via various organizations represented on the IPM Council. A very important activity will be the continued sharing of information on the latest science-based methods, products and alternatives for pest management. ♦

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What is evapotranspiration (ET)? Simply defined, it is the sum of both the evaporation of moisture from the surface of the soil and the transpiration of moisture from the foliage or leaf of a plant. The main weather factors contributing to a high ET are temperature, humidity, wind speed and solar radiation. ET varies throughout the day and irrigation should be applied during the early morning when the weather factors contribute to a lower ET.

Water budgeting takes into account changing ET rates throughout the week and month (Figure 1). Every irrigation controller should be specified to include a "water budget" feature which allows the irrigation manager to quickly adjust all run times with one macro setting. Adjusting the run times to correspond to the changing ET is a must for water savings and healthy turf. Leaving the same run time throughout the season simply means that water is applied unnecessarily.

On a very hot summer day, the ET for sports field turf can rise as high as 35 mm (1.4 inches) per week. On a standard soccer field this equates to about 238 mega litres (63,000 gallons) per week. Saving

even a conservative 20% of this amount is worth the gain in water costs.

Checklist

In the sidebar to the right is a quick checklist to see how well your irrigation system measures up to the typical standards endorsed by the irrigation industry.

Results

If you scored a ten, congratulations! Your sports field should become an industry standard and given honourable mention in the next irrigation article in *Sports Turf Manager*. A score of seven or more means you are well on your way to setting irrigation standards. A score below six means it is time to hire an irrigation specialist.

An irrigation specialist is trained to identify maximum irrigation efficiencies, thus assisting in the development of a healthy sports turf while preserving a valuable water resource. At the end of the day, every drop counts. ♦

About the author. Gregory Snaith, P.Eng., C.I.D. is an Irrigation Consultant with Creative Irrigation Solutions Inc. Greg can be reached at 519-465-0278 (cell), 888-654-3637 (toll free) or via email at gsnaith@creativeirrigation.on.ca.

IRRIGATION CHECKLIST

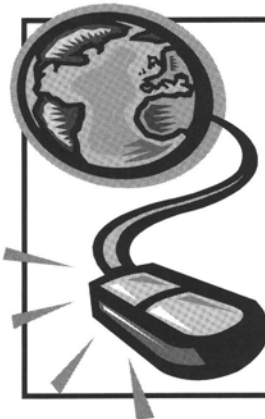
1. Rain or moisture sensor (turns system off during a rain)
2. Controller has "Water Budget" feature (0-200 per cent adjustment)
3. Irrigate during the night or early morning (when ET is lowest)
4. Head to head coverage (rotors throw water to next rotor)
5. Rotors operate at designed water pressure
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9. Hired an irrigation certified water auditor to make recommendations
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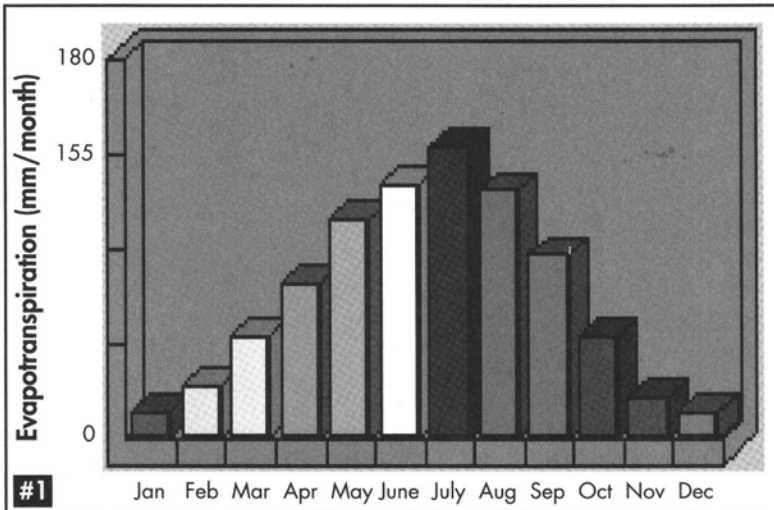


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VISUALIZING IRRIGATION PRINCIPLES...

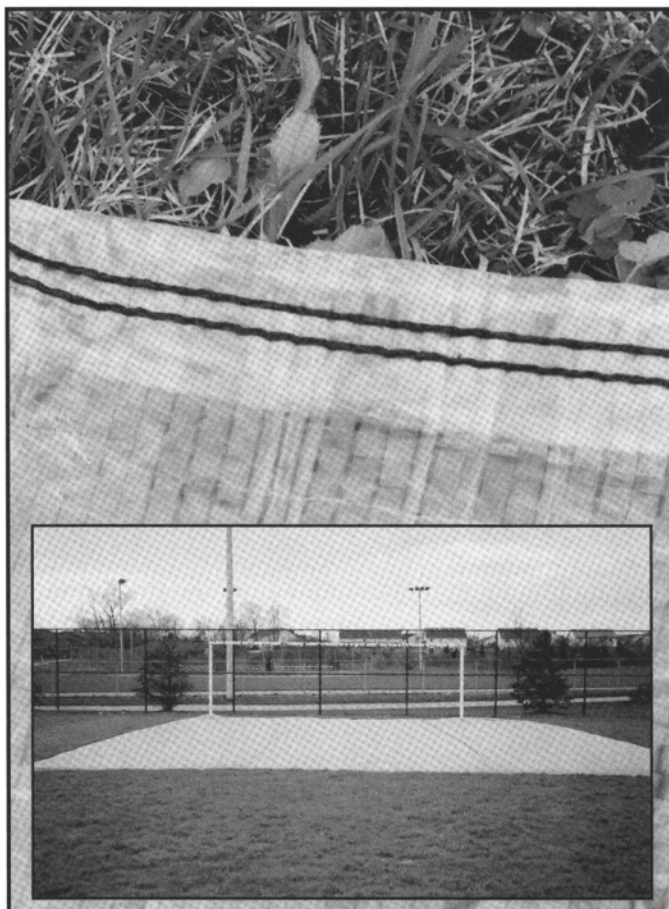
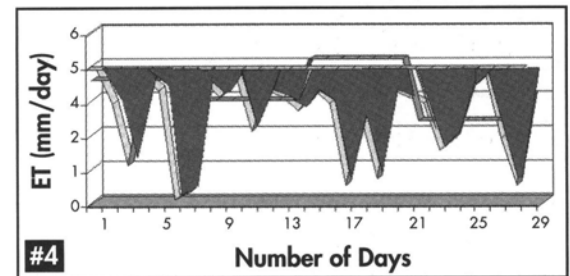
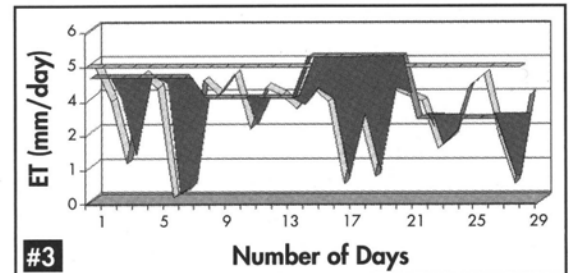
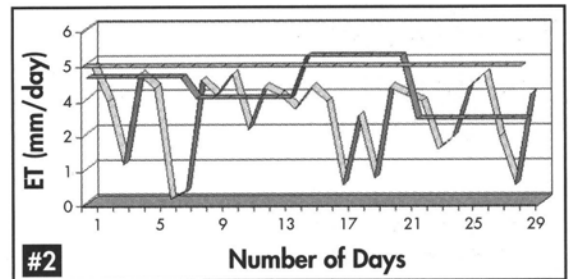


Graph #1 indicates that seasonal ET rates peak during July or August.

Graph #2. The top line indicates amount of irrigation water added with monthly adjustment. The middle line indicates a weekly adjustment corresponding to weather. The bottom line indicates actual daily ET rates.

Graph #3 indicates the amount of overwatering with weekly adjustments.

Graph #4 indicates the amount of overwatering with monthly adjustments.



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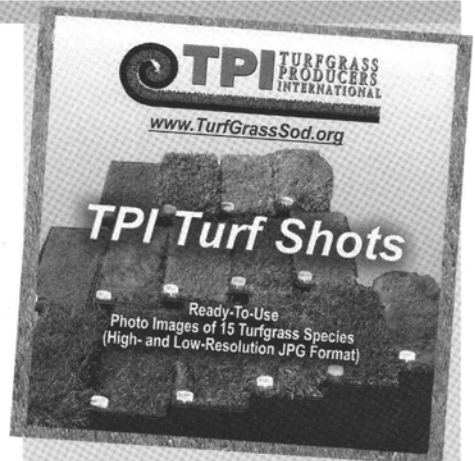
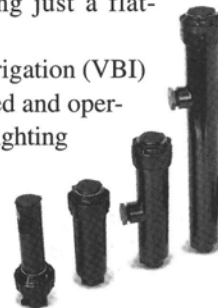
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Bentgrass: Creeping	18th Green Bengal L-93 Penn A-4 Penn G-6	Penncross Penneagle Pennlinks Pennway Providence	L-93 Penn A-4 Penncross Penneagle Pennlinks Trueline	Dominant Plus L-93 Penn A-4 Penn G-6 Penn Trio Coated Penncross T-1	Aggressor Cato Mariner National Penn G-1	Penncross Penneagle Pennlinks Pennway Providence	Penn A-1 Penn A-2 Penn A-4 Penn G-2	Penncross Penneagle Pennlinks Seaside II	A-4 Brighton 18th Green G-6 L-93 SR1020	Penncross Penneagle Pennlinks Pennway Providence
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Poa supina			Supranova				Supranova			
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(Source: OMAFRA Turfgrass Management Recommendations, 2000)

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	Colonial <i>A. tenuis</i>	Creeping <i>A. palustris/A. stolonifera</i>	Annual <i>P. annua</i>	Kentucky <i>P. pratensis</i>	Rough <i>P. trivialis</i>	Fine or Red <i>F. rubra spp.</i>	Fine or Sheep <i>F. ovina</i>	Tall <i>F. arundinacea</i>	Annual <i>L. multiflorum</i>	Perennial <i>L. perenne</i>
Cultivated varieties (cultivars) as of 2007	<6	28	1	161	<6	10	25	169	200,000 to 300,000	198
Seeds / pound	5.5 to 9 million	7.5 million	med. (2-3 mm) bunch or stolons low	1.3 to 1.8 million med. (2-4 mm) strong rhizomes good	2.5 million fine (1-4 mm) stolons low	409,000 to 430,000 fine (0.5-1.5 mm) creeping rhizomes good	530,000 fine (0.5 to 1.5 mm) bunch medium	230,000 to 250,000 coarse (5-10 mm) bunch (some w/weak rhizomes) medium	coarse (3-7 mm) bunch poor	200,000 to 300,000 medium (2-5 mm) bunch medium
Description	med. (1-3 mm) bunch medium	medium (2-3 mm) creeping stolons medium	low	medium good	low good	fair medium	poor good	good medium	poor poor	fair poor
Environmental Adaptation	medium good	medium excellent	poor	medium poor-medium	poor excellent	good excellent	good excellent	good good	medium poor	fair medium
Heat hardness	medium	medium	low	medium	low	fair	poor	good	poor	fair
Cold hardness	good	excellent	poor	good	good	medium	good	medium	poor	poor
Killing Temperature (F°)	fair	poor	poor	medium	poor	good	good	good	medium	fair
Drought resistance	medium	good	poor	poor-medium	poor	excellent	excellent	good	poor	medium
Shade adaptation	poor	poor-medium	poor	poor-medium	poor	medium	medium	medium	poor	good
Salt tolerance	poor	poor	poor	medium	poor	medium	medium	good	poor	good
Wear tolerance	medium	good	poor	good	medium	medium	poor	poor	poor	poor
Recuperative potential	medium	good	fair	medium	good	fair	poor	poor	poor	poor
Submersion tolerance										fair
Establishment										
Pounds of Seed/1,000 sq. ft.	0.75 to 2	0.75 to 2	68-89	2 to 3 59-86	1 to 2 59-86	4 to 6 59-77	3 to 4.5 59-77	6 to 10 68-86	7 to 10 68-86	4 to 7 68-86
Optimum temp. for germination (F°)	seeded	seeded/vegetative	seeded	seeded/vegetative	seeded	seeded	seeded	seeded	seeded	seeded
Establishment method	poor	poor	excellent	medium	medium	good	good	excellent	excellent	excellent
Establishment rate	7 to 14	7 to 14	fast	8 to 21	10 to 21	10 to 21	10 to 21	10 to 14	7 to 14	5 to 12
Days to germinate	fast	fast	fast	fast	fast	slow-medium	slow-medium	fast	fast	fast
Growth rate	n/a	n/a	n/a	n/a	n/a	n/a	n/a	14-21	n/a	n/a
Days to first mowing	medium	good	poor	excellent	poor	good	medium	poor	poor	poor
Sod formation										
Cultural Requirements										
pH	5.5 to 6.7	5.5 to 6.5	5.5 to 6.5	6.0 to 7.0	6.0 to 7.0	5.5 to 6.5	5.0 to 6.0	4.7 to 8.5	6.0 to 7.0	6.0 to 7.0
Cultural (maintenance) intensity	medium	high	high	medium	medium	low	low	medium	medium	medium
Cutting height (inches)	0.4 to 0.8	0.3 to 0.7	0.2 to 1.0	0.5 to 3.0	0.5 to 1.0	1.0 to 2.5	2.0 to 2.5	1.7 to 3.0	1.5 to 2.5	0.5 to 1.5
Mowing frequency (days)	1 to 3	1 to 3	1 to 3	5 to 7	5 to 7	7	7	7 to 14	5 to 7	5 to 7
Nitrogen (lbs/1000/month)	0.5 to 1.0	0.5 to 1.4	0.5 to 1.0	0.4 to 1.0	0.5 to 1.0	0.2 to 0.5	0 to 0.5	0.3 to 0.75	0.4 to 1.0	0.4 to 1.0
Moisture / irrigation	medium	high	high	medium	high	low	low	medium	medium	medium
Evapotranspiration rate (ET) (mm d ⁻¹)	high	> 10	> 10	> 10	> 10	7 - 8.5	7 - 8.5	> 10	> 10	8.5 - 10
Need for Dethatching	high	high	medium	medium	medium	medium	medium	low	low	low

Note: It is important to understand that the "ratings" are based on the average of averages within a species and that a particular characteristic of one variety within a species may be higher or lower than the same characteristic for a variety of a different species. This chart should only be used as a basic guideline and beginning point when selecting turfgrass for a specific purpose or site.



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