Pesticide ban impacts:
Three perspectives from Canada

THE REVISED REGULATIONS under Canada's Pesticides Act that eliminated the "cosmetic" use of pesticides in Ontario came into effect on Earth Day 2009. Municipalities have now had one full season to adapt to the changes in operations which have resulted from the new legislation. This article provides perspectives from three different municipalities as to the impacts and costs of these changes.

CITY OF WATERLOO

For Waterloo, what are the true costs of the pesticide ban? This is an interesting question for a city that has a strong knowledge and service-based economy. Waterloo is a community of 120,000 people that has 814 hectares of green space. If you have visited Waterloo, you may have experienced RIM Park that offers a major indoor recreation facility, a mix of multi-use fields and baseball diamonds, a golf course and an abundance of natural areas along the Grand River.

Understanding and investigating the questions surrounding pesticide use began for Waterloo some 30 years ago when both citizens and staff recognized that routine grounds maintenance practices were both fiscally and environmentally undesirable. Alternatives were explored and researched. The result was a Plant Health Care Program designed to work with nature, not against it. It encouraged creative deployment of horticultural practices and recognized that we are working with living plants/organisms, not sterile mechanical products. The program included the same elements that so many communities are now using today: monitoring/scheduling, mowing, fertilizing, aerating, topdressing, overseeding, irrigating, dethatching, alternatives, and education and training.

The outcome of Waterloo's efforts can be demonstrated by the fact in 1979 we sprayed 36% of our green spaces. By the year 1993 it was down to 0.5%, and today, of course, we do not spray at all in accordance with the ban.

Table 1 summarizes the base program costs (excluding overheads) for the City of Waterloo in 2008 on non-irrigated and irrigated multi-use fields and on an irrigated baseball field. The pesticide ban has had minimal impact on our most recent years operating budgets as we have programmed the cost into our operations since the 1980s.

We continually monitor, inspect and renovate our turf. We look for alternative ways of doing things including sand injection, utilizing a Blec Sandmaster, building fields to recommended standards, and investing in artificial turf fields.

The Plant Health Care Program at the City of Waterloo has been successful as a result of the involvement and commitment of staff, redefining how we work, political will, citizen involvement, and requesting the necessary budget when opportunities were available. In doing so, the pesticide ban has had a minimal effect on City of Waterloo operations.

CITY OF OSHAWA

Oshawa has 150,000 residents. The city maintains 126 parks comprising 953 acres (maintained parkland), 50 rectangular fields, 54 ball diamonds, 7,766 linear meters of landscape buffer

The outcome of Waterloo's efforts can be demonstrated by the fact in **1979 we sprayed 36%** of our green spaces. By the year **1993 it was down to 0.5%,** and **today, of course, we do not spray at all** in accordance with the ban.

Table 1. A summary of base program costs (excluding overheads) for the City of Waterloo in 2008 on irrigated and non-irrigated multi-use fields and on an irrigated baseball field.

Maintenance Activity	Non-Irrigated Multi-Use Field	Irrigated Multi-Use Field	Irrigated Baseball Field
Inspections	$100	$100	$100
Spring Repairs & Divot Overseeding	$525	$650*	$400
Aerating	$275	$400	$300
Fertilizer & Soil Amend.	$800	$800	$600
Topdressing & Overseeding	$3,500	$3,500	$600
Mowing	$400	$800	$1,000
Irrigation	-	$500	$500
TOTAL	**$5,600**	**$6,750**	**$3,500**

*Includes crease overseeding and turf blanket

Table 2. Additional costs incurred by the City of Oshawa due to alternative practices under Ontario's Cosmetic Pesticides Ban.

2009	Cost	Items
Agricultural & Botanical Alternatives	$57,500 $50,000	seed, fertilizer, topdressing mycorrhizae, corn gluten, alfalfa, worm castings, kelp, gypsum …
Vegetation Control	$62,400	vinegar, mulch

Table 3. Costs for cultural practices, labour and equipment, City of Oshawa.

Year	Core Aer.	Slit Aer.	Overseed	Topdress	Fertilize	Alternatives	TOTAL
2006	$8,270	$15,537	$11,402	$4,400	$27,132	$32,863	**$99,640**
2007	$3,237	$10,252	$25,137	$14,474	$25,620	$24,310	**$103,030**
2008	$3,336	$11,827	$25,248	$6,142	$42,892	$12,206	**$101,651**
2009	$6,597	$12,000	$17,695	$2,500	$20,414	$23,410	**$82,616**

strips, 67 shrub/perennial beds and 91 annual beds.

Oshawa instituted a Pest Management Program, approved by Council, in 2003. This was put in place as an alternative to a pesticide ban and had the goal of reducing or eliminating the use of pesticides while maintaining quality turf. As a direct result of this program, an additional $400,000 was added to the base budget to cover equipment, facilities, three additional staff, materials, and education and outreach. Because of this, Oshawa was well prepared for the 2009 pesticide legislation and the impacts were less than they may have been otherwise.

The new pesticide legislation resulted in some additional costs to Oshawa related to alternate practices. These are summarized in Table 2.

In order to better focus efforts to promote healthy turf, Oshawa engaged the Guelph Turfgrass Institute to carry out a $50,000 study. This provided for a comprehensive report and included recommendations for:

- Procedures
- Monitoring techniques
- Fertilizing schedule based on soil tests
- Maintenance schedule for compaction, overseeding and topdressing
- Field use (open/close dates)
- Education and outreach programs
- Equipment purchases
- Drainage improvements
- Development standards
- Provision for skilled staff
- Staff training

A summarized report was provided for user groups.

The City of Oshawa has implemented use of a number of alternative products to replace traditional pesticides. These include:

- Calcium powder for compaction
- Corn gluten to prevent weed germination
- Compost: nutrients, bacteria, fungi
- Worm castings: nutrients, bacteria, fungi
- Crumb rubber to prevent damage
- Granular and liquid fertilizers
- Gypsum to prevent salt damage, compaction
- Kelp for nutrients
- Seed: endophytic, sun/shade, rhizomes, perennial rye (fast germination but clumps)
- Topdressing to match native soil
- Horticultural vinegar (hard surfaces)

In addition a number of cultural practices have been used: 3" cutting height, overseeding and topdressing, fertilizing (granular and liquid), aerating (core and solid tine), soil tests, and monitoring of fields and customized maintenance based on conditions.

Costs for these cultural practices are shown in Table 3. Because of the previous Pest Management Program, the pesticide ban did not significantly change these costs. Table 4 illustrates the practices and costs for a typical high end grass field in Oshawa.

While overall implications and costs have been minimal, the pesticide ban has had major impacts on how Oshawa treats hard surfaces. Standard practices include the use of horticultural vinegar for downtown areas every two weeks, including treatment of warning tracks, tennis courts, intersections, walkways and sidewalks. Monthly newspaper ads were used in place of posting signs. Incremental costs for hard surface treatments were $1,875 monthly ads, $11,000/year product and $12,800/yr wages, equipment for a total of $25,675. Cost comparisons are provided in Table 5.

CITY OF MISSISSAUGA

Mississauga Parks and Forestry serves 700,000 residents. The city has 500 parks (includes greenbelts and woodlands), 253 sports fields, 138 ball diamonds and 250,000 street trees. In 1995, Mississauga Council approved a policy which resulted in a 95% reduction in pesticide use. The policy included:

- No pesticide use for general parkland
- Spot spraying only for sports fields
- Use for high end horticulture
- Use for hard surfaces and boulevards
- Use for harmful/invasive plants

In addition, Mississauga proactively initiated increased development of artificial fields (currently have six). The 1995 changes also resulted in increased hand weeding of beds, more mulching, and the institution of cultural practices similar to those used in Oshawa. As a result of the 2009 provincial legislation, some operational practices have been modified. These are summarized in Table 6.

Table 4. Typical costs for a rectangular field, City of Oshawa, 2009.

Item	Quantity	Product	Man Hours	Equipment	TOTAL
Soil test	1/year	$15	$5	$20	$40
Aerate	2/month	n/a	$130	$120	$256
Overseed	2/year	$1,440	$78	$100	$1,618
Fertilize G*	1/month	$560	$364	$231	$1,155
Fertilize L**	1/month	$500	$364	$231	$1,095
Compost	1/year	$20	$156	$100	$276
Grass cutting	1/week	n/a	$348	$1,363	$1,711
TOTAL					**$6,151**

* G, granular ** L, liquid

Table 5. Cost comparisons for hard surface treatments, City of Oshawa.

	Product Cost	Wages & Equipment	TOTAL
Roundup 2007	$1,000	$7,428	**$8,628**
Vinegar 2009	$12,000	$11,643	**$23,643**

Table 6. Modified practices due to the pesticide ban, City of Mississauga.

Location	Existing Practice	New Practice
Specialized Horticultural Beds	Pesticide treatment to deal with diseases, fungus etc.	Class 11 pesticides
Shrub & Perennial Beds	Hand weeding, mulching	No change
General Parkland	Periodic cultural practices	No change
Minor Fields	Periodic cultural practices	No change
Lit Irrigated Fields	Cultural practices, spot spraying	Cultural practices, periodic resodding
Baseball Warning Tracks	Roundup	Roto tilling; alternate surface
Boulevards	Bi-annual spraying	Cultural practices, Class 11 pesticides
Hard Surfaces	Bi-annual spraying	Class 11 pesticides
Forest Infestations	Treatment as needed (e.g. BTK)	No change
Invasive/Harmful Plants	Treatment as needed	No change, MNR approval required

As noted previously, cultural practices (fertilizing, aeration, topdressing and overseeding) have been embedded in our operating budgets since the mid 1990s so the pesticide ban did not impact operating costs from this perspective. The average cost for a major lit field remains at $8,700. It is anticipated however that major turf renovations may be required eventually for some fields. This would represent a periodic cost of $200,000.

A major impact of the 2009 legislation has been changes in the maintenance of baseball warning tracks. This job now requires six staff for 2-4 hours. Previously, using Roundup, one staff person could treat a warning track in an hour. This represents incremental labour costs of $500 per diamond per treatment.

Another cost increase that has to be budgeted for is hard surface maintenance. Treating twice per year with horticultural vinegar results in incremental costs of $50K. Lastly, the impact on specialized horticulture like roses and rhododendrons has yet to be determined, though no major problems have surfaced as of yet. Overall, the history of pesticide policy in Mississauga put the city in a good position to deal with the new provincial legislation

All three municipalities implemented pesticide reduction programs prior to the Cosmetic Pesticides Ban Act. As a consequence, many of the practices and alternative products to allow for effective maintenance under the new legislation were already in use. So while there were incremental costs in some specific areas, impacts were not as severe as they might have been.

All Ontario municipalities and other turf managers will need to continue to adapt to the changing "tool kit" available to them as a result of legislative changes. It is hoped that research and innovation on the part of turf managers will allow for more effective alternative products and practices for the future. ■

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Maximizing
the durability of athletic fields

Athletic fields are being used to host more and more events and tournaments. The addition of lights is a major reason for this situation. In some cases, new sports such as lacrosse are being added to fields already overburdened with soccer events.

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DURABLE ATHLETIC FIELDS begin with sound construction and careful planning, and good management practices can increase a field's durability. The basic concepts presented here can help field managers extend the usability of athletic fields.

Field managers are asked to maintain premier turf surfaces knowing that the field will be overused and likely not make it through the playing season. Athletic fields are being used to host more and more events and tournaments. The addition of lights is a major reason for this situation. In some cases, new sports such as lacrosse are being added to fields already overburdened with soccer events. Football fields need to double as general purpose fields for special events. Of course, at some point, a field will begin showing signs of wear. And at some point, the field can fail.

Because field wear is influenced by so many variables, no definitive equation exists to predict when a field will begin showing signs of wear or when it will fail. Such a prediction would be invaluable to schools and municipalities as they face increased legal questions and liability issues regarding injuries associated with poorly designed or constructed facilities, and/or mismanaged facilities. Field managers struggle to accommodate all participating groups without damaging the fields. If fields are overused, then the likelihood of a player becoming injured due to poor field conditions increases. What is a field manager to do?

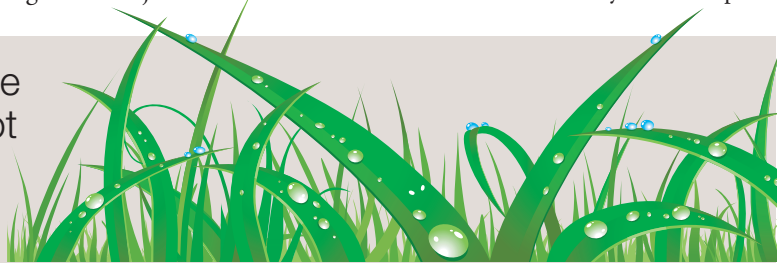
Ideally, adequate numbers of fields would be available so use could be properly distributed. It is best to have specific game and practice fields dedicated only to one sport to eliminate compound wear from two or more sports. Additionally, sound turf maintenance program promotes turf growth and recovery. Unfortunately, budgets for field management are often the most limiting factor.

Good fields begin with a sound construction strategy, and careful planning is imperative for long-term success.

ENSURE ADEQUATE DRAINAGE

Several construction strategies can maximize field durability. At the top of

Wet fields are more prone to damage than dry fields. Adequate drainage not only prevents rainouts; ***it can also prolong a field's life.***



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the list is adequate drainage. Wet fields are more prone to damage than dry fields. Adequate drainage not only prevents rainouts; it can also prolong a field's life. Drainage can be achieved by using surface flow off fields that are crowned or by using subsurface drainage lines. Subsurface drainage depends on good water infiltration of the field. For this reason, a sand-based field will move the water from the field surface much more effectively than relying on surface flow alone. In addition, sand-based fields are less likely to compact. A compacted field generally has lower water infiltration rates, so the surface may remain wet for longer periods of time following a moderate rain.

How much use can a field withstand? This question is best answered using on-site field-use data from previous years. Field data collection requires some careful documentation of games, practices, and other events. As the demands on fields increase, more managers are starting to track field use. Probably the easiest data to track is the number of hours the fields are in use during the year.

Before a field is ever used, planners, designers, and managers should understand its expected level of use and performance. These expectations should be realistic. Those involved in planning and maintaining a field should consider the maintenance budget, available equipment, and labor. It is often helpful to have one field labeled as a "championship" field and the other fields labeled as "practice" fields. This can help everyone involved define how each field can be managed via maintenance inputs and controlled scheduling to maximize its condition. Often the higher quality championship fields can be used as examples to encourage the construction of new fields that alleviate use or to increase maintenance budgets of existing fields.

Baseball and softball should be evaluated differently because a large percentage of each game is played on a clay infield. The reality is that it takes only one extremely wet game to destroy a field. Practices can also cause appreciable damage due to their repetitive activity in particular areas of a field, so practices must also be put into the equation.

The number of events a field can handle will ultimately depend upon field construction, weather conditions during the season (especially just before and during games), maintenance practices, recuperative periods, and the time of year.

RESTRICT FIELD USE IF NECESSARY

Obviously, the more traffic you put on the field, the faster the turf declines. Also, particular sports cause more severe field damage in localized areas. Football tends to cause extreme wear between the hash marks. Soccer wears the quickest in the middle of the field, in front of the goal mouths, along the sidelines (due to linesmen), and in the corner kick areas. Any repetitive action on the same area of the field accelerates wear. That is why practices and warm-up drills are often more damaging than games. But it is not just the athletes on the field who can cause wear problems. A marching band is extremely hard on a field because bands tend to march along the same lines all the time, both during a game and in practice. Cheerleaders and pep squads during games may also result in turf damage due to heavy use in a confined area.

Some reduction in traffic damage can be avoided by doing the following:

- Restrict use when soil is very wet.
- Restrict use when soil is very dry and turf is wilted.
- Always have coaches rotate heavy play areas during practices.
- Use portable goals when possible, and move them around the field.
- If possible, move a soccer field's sidelines during the year
- If a space is large enough to accommodate field rotation (see Figure 1), periodically rotate the entire field.
- On game fields, restrict the number of practices to a minimum.
- Have a reduced game schedule when grass is dormant.
- Have regularly scheduled rest times that are used to repair minor damages.
- Do not allow unofficial play.
- Use tarps (covers) on bench areas to reduce severe wear by coaches and team members,
- Use tarps (covers) on sideline areas used by the cheerleaders.

In most cases, field users will need to be informed of potential wear problems. Most users do not understand the damage that they can cause. Although it may be obvious to a field manager that a field is too wet for play, it is not obvious to most field users. Close fields when necessary. If the field manager is not allowed to close the field, the decision-makers should be made aware of the potential short and long-term damage that may result from field use given the situation. Unfortunately, some fields are scheduled the same as basketball courts or hard-surface tennis courts, without consideration of the turf surface's wearability. The field manager is in the best position to decide how much wear is too much.

Field managers can use a few practices that will maximize a field's ability to handle wear.

First, make every effort to begin the sporting season with 100 percent turf coverage. At the beginning of the year, schedule recuperative times during the season, realizing that non-overseeded bermudagrass fields will not recuperate very quickly in the late fall or winter months. Overseeding can be used to protect dormant bermudagrass if excessive wear is expected during the cooler months. But remember, the overseeding grass often can be a significant competitor with the bermudagrass in late spring to early summer when the bermudagrass is trying to grow. If premier conditions are needed during those months, then the overseed may need to be chemically removed to allow the bermudagrass to more easily re-establish.

Adjust maintenance practices to address the condition of the fields. Increase or decrease inputs (particularly irrigation and fertilization) as dictated by environmental conditions and the turf's growth. Manage high wear areas differently than the rest of the field. This allows a manager to improve the entire field surface without dramatically increasing the budget. The most helpful practice along these lines is applying supplemental nitrogen fertilizer to the high

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wear areas to promote recuperation. The bermudagrass will respond to the added fertilization and promote more rapid growth, filling in divots and rip-outs quicker. The same can be done with aerification, soil amendments, and seeding. Think of a field as many parts, rather than just one field. The goal mouths of five fields in close proximity can be core cultivated in the same amount of time as one entire field. If the field routinely has localized standing water after a small shower, aerify those areas and backfill with an appropriate coarser textured soil amendment (such as sand or calcined clay). Spread seed (if appropriate) in wear areas before games and practices.

Some management practices that can reduce field wear may be more controversial. Advocate that less aggressive cleat patterns be worn by athletes. Studies have shown that cleat design can dramatically influence turf damage. In one study, a trainer shoe produced 37 percent less turf damage than a standard soccer cleat. A 6-stud replacement cleat was 34 percent more damaging than the standard soccer cleat. The numbers are more relative than absolute, but they illustrate the impact on turf damage from something as simple as a shoe. Shoes with a greater number of smaller cleats will cause less wear and compaction damage (more cleats displace weight better) than more traditional cleat design. Of course there is a trade off—reduced traction by the user. The trainer shoe in the above-mentioned study required 47 percent less force to break traction than a standard soccer cleat. This difference may be unacceptable at certain levels of athletic competition.

To maximize field use and durability, there must be open communication among the field manager, the people responsible for scheduling the field, and the field users. Once excessive wear and field overuse results in hazardous and unsafe playing conditions, the field manager must request that the field be closed. Safety of the users is paramount. With good field design, construction, management, reasonable care and maintenance, and proper use, fields can continue to provide an acceptable playing surface. ■

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Technology
and the turfgrass management industry

Technological advances have swept across the turf industry in recent years. Irrigation systems that were once operated by mechanical time clocks are now controlled by state-of-the-art computer systems with software tools that allow the user to know exactly how much water flowed through the system during the last irrigation cycle. Similarly, sensors connected to the same computer monitor pressure and can shut the entire system off in the event of a sudden loss of pressure possibly due to a broken irrigation line. These same irrigation systems can be remotely monitored and activated or deactivated with the use of most Smartphones. Other uses of technology include computerized parts inventory systems, digital time keeping systems, GPS/GIS, golf cart monitoring systems, TRIMS Grounds Management Software® – just to name a few.

These advances demonstrate that we live in a digital world, a fact that can no longer be denied. As inhabitants of a digital world, we come from differing perspectives. Marc Prensky, author of "Digital Natives, Digital Immigrants," describes a Digital Native as a person who was born into the digital era; an era where digital technology such as computers, the Internet, mobile phones and MP3s have always existed. In other words, the digital world is as natural and indigenous to them as an American being born in the United States.

Conversely, a Digital Immigrant is an individual who grew up without digital technology and adopted it later. This is akin to native-born Russian immigrating to the United States where he/she is expected to adapt and assimilate to their newly adopted home. Palfrey and Gasser write of Digital Settlers, individuals who grew up in the analog world but immersed themselves into digital technologies and were part of digital evolution. Another group in the digital world is the Digital Dropouts. These are individuals who choose not to or weren't able to understand or use digital technology.

So which are you?

THE TOOLS

The past couple of years have brought several interesting "tools" to the digital world, namely social networking applications ("Apps" for short). A social network is a social structure made of individuals or organizations called "nodes," which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, financial exchange, dislike, or relationships of beliefs, knowledge or prestige." Social networks are mainstream; especially amongst the younger generation. The Pew Research Center cites that

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35% of adults have profiles on social networking sites while 55% of online teens use social networking sites. The primary social networks are:

Facebook. "Giving people the power to share and make the world more open and connected." Facebook allows registered users to "interact" with one another on the "Wall," a space on every user's profile page that allows "friends" to post messages for the user to see. Facebook users can update their "Status" to inform their friends of their whereabouts and actions and you can "Chat" with friends who are online. Facebook also allows users to upload photos. All of these features are available from the computer or on most Smartphones. Some suggest that Facebook has greater privacy than MySpace but hackers have managed to infiltrate it. Profile settings regulate who sees what. Visit www.facebook.com to learn more about Facebook features. Feel free to check out the University of Florida's Golf and Sports Turf Management Facebook Fan page (www.facebook.com/ufturf) and be sure to "Become a Fan" if you would like to keep in touch.

MySpace. "A place for friends." MySpace is similar to Facebook but with one significant difference between the two websites: the level of customization. MySpace allows users to decorate their profiles using different backgrounds, pictures, etc. MySpace has been formed with entertainment and music in mind and so videos, music, and pictures are found on many of the MySpace pages. MySpace is deemed to be more "open" and your content can be seen by more people. As with Facebook, profile settings regulates who sees what. Check out www.myspace.com for more information.

Twitter. "Share and discover what's happening right now, anywhere in the world." Twitter is a social networking and blogging service that allows users to send and read messages known as "tweets." Tweets are text-based posts of up to 140 characters that are displayed on your profile page and delivered to your subscribers who are known as "followers." Tweeters can restrict delivery of their updates to those in their circle of friends or allow open access for all to see. You can learn more about Twitter at www.twitter.com.

Google Buzz. "Go beyond status messages." Google Buzz is a relative newcomer to the social networking stage. Backed by the resources and people responsible for the most popular webpage in the world, Google Buzz has positioned itself as a simple means of communicating whatever it is that you find interesting. They have integrated sharing of photos and video in a manner that is seamless and in-line with status updates. Using their existing GMAIL accountholders as the early adopters they have created what could turn out to be the third largest social networking tool overnight. One standout difference with Google Buzz is the built-in feature that allows users to share their location when posting updates. Individuals can post public updates complete with location information that show up on a map on Google. If you are new to an area you may choose to browse those comments to learn

Tools

Flickr. Flickr is an image and video hosting website (www.flickr.com) web services suite, and online community.

Twitpic. Similar to Flickr, Twitpic is a website (www.twitpic.com) that allows users to post pictures to the Twitter service.

Blog. Short for Web Log, blogs are places for you to write about anything you so desire.

YouTube. A video hosting website where one can place videos of just about anything.

Google docs. "Create and share your work online." Google docs is a free tool that offers a number of great features.

what people think of the public golf course or to check on reviews of a restaurant. You can learn more about Google Buzz at www.buzz.google.com.

Linkedin. "Relationships matter." Linkedin is a business-oriented social networking site mainly used for professional networking. Registered users can maintain a list of contact details of people they know and trust in business. The people in the list are called "Connections." The list of connections is then cross-referenced allowing users to network with a "connection of a connection" or "friend of a friend." There is also a Q&A section where you can ask business related questions or share business related answers. You can learn more about Linkedin at www.linkedin.com.

Regardless of where you feel that you fit, there is a good chance that you will interact with one of the many digital tools that you can find on the internet. The purpose of each social network varies slightly, and in some cases, may not be all that evident. MySpace is still the dominant social network, especially among the younger generation (Digital Natives). However, a quick internet search reveals that Facebook is rapidly becoming the most used social network and has likely surpassed MySpace. Research shows that different social networks appeal to those of differing ages. Teenagers are drawn to MySpace whereas LinkedIn is used commonly by working-aged individuals.

In addition to these primary social networking sites, many applications have been developed to assist those who participate in social networks. Examples of tools to compliment social networking sites include:

Flickr. Flickr is an image and video hosting website (www.flickr.com) web services suite, and online community. In addition to being a popular website for users to share and embed personal photographs, the service is widely used by bloggers to host images that they embed in blogs and social media. Flickr offers two levels of service: a "Free" membership that allows you to upload a reasonable number of pictures and video and a "Pro" membership that provides unlimited uploads. There are many photo hosting sites similar to Flickr, each with their own unique traits and features. Regularly uploading all of your pictures to a site like Flickr offers the added bonus of a free backup of your files in the event that you suffer from an unexpected hard drive failure.

Twitpic. Similar to Flickr, Twitpic is a website (www.twitpic.com) that allows users to post pictures to the Twitter service. If you have a Twitter account then you already have a Twitpic account and you can login to Twitpic with your Twitter username and password.

Blog. Short for Web Log, blogs are places for you to write about anything you so desire. Some use blogs to "rant and rave" about political activities while others use blogs as a personal journal or chronicle of their life activities. An example of a turf related blog is: http://www.turfdiseases.blogspot.com/

YouTube. A video hosting website where one can place videos of just about

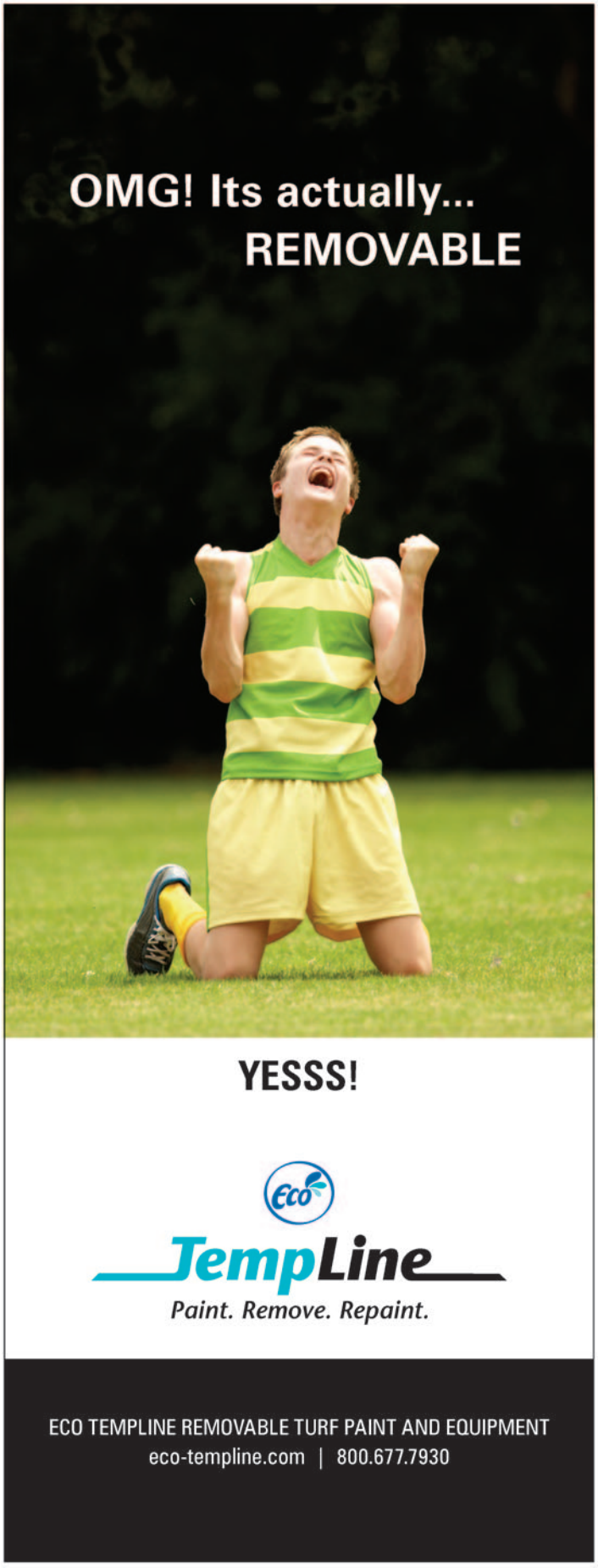
anything. YouTube use is diverse and includes videos ranging from product promotion videos and student recruitment videos. An example of our Golf and Sports Turf Management degree program recruiting video can be seen here: (http://www.youtube.com/watch?v=2REnxRiJ6qk).

Google docs. "Create and share your work online." Google docs is a free tool that offers a number of great features. In a nutshell, Google docs is a cloud-based software suite that you can use to format and edit documents, spreadsheets, presentations, and forms from any computer that has access to the internet. It also allows you to share your content with other users giving you the ability to work on a document simultaneously with another user located in another physical location. A relatively new tool that Google has added to Docs is the form feature. Maybe you would like to create a short feedback form for customers to leave comments. You can create a form, complete with many different formatting options that you can then post on a company website or distribute through email. All responses are compiled in a spreadsheet in Google Docs where you can review and summarize the information at your convenience. To access Google docs you need to have a Google account, which is, of course, free. Just go to www.docs.google.com to sign-up. Once you have signed up you will have access to Google docs and an added bonus of over 7 gigabytes of online storage that can be used to store any and all files that you would like to backup or store for easy access.

Should I or shouldn't I?

The question often asked by turf managers is "Should I participate in a social network?" Our answer is sure, why not? Social networks are a great place to reconnect with friends of the past or to connect with current colleagues. Within the social networks, you control who your friends are—if you don't want to be their friend, you simply do not accept their request. Every year the New Oxford American Dictionary announces the new word of the year. The new word of 2009 was "unfriend," a verb which means "to remove someone as a 'friend' on a social networking site such as Facebook. So, if your "friend" does something you don't like, you can simply "unfriend" them and they cannot see your status updates.

The next logical question asked is, "Which social network?" In the Green Industry, it appears that Facebook is the most commonly used; however, the Facebook status updates may actually be originating from a Twitter account. Settings within the Twitter and Facebook accounts allow "tweets" to update Facebook automatically. One reason Facebook may be the most popular in the Green Industry is because Facebook allows



for the creation of "fan" clubs and "groups." Many university turf programs have created Facebook groups for their current students and alumni to connect with each other

Additionally, many Green Industry businesses and allied associations have created Facebook profiles and the profile manager provides regular updates. From a marketing standpoint, Facebook, Twitter, and Buzz offer a relatively affordable means of reaching a targeted audience. For example, UF's Environmental Horticulture program has recently started targeting students in community colleges in Florida through Facebook ads. As a marketer you are able to specify age groups, keywords, location, interests, etc. to target your ads to those individuals who you feel will be most interested in your product. You can choose how much you want to spend with the minimum being around $1 per day. That might not seem like much, but for that $1 one is able to receive approximately 10,000 impressions (ad placements) each day on the pages of people who fit the criteria that we feel might be interested in attending UF upon finishing their community college education. Not bad when you consider how much it would cost in travel to reach just a fraction of the same group.

Though social networks offer some great benefits, users should exercise caution when using the networks. For starters:

• Social networks are really "private." People ranging from computer hackers to police investigators search social networks. Consequently, do not post too much personal information. For starters, leave the birthday and address lines vacant.

• Keep "business-related" sites business and "personal sites" personal. Espousing personal opinions or ideas on business-related social networks could come back to haunt you in the event that your opinion or ideas differ with those of your employer or customer.

• Do not post too many details related to your whereabouts. For example, if your job requires significant travel and you spend a great deal of time away from you home and family – don't advertise it. Doing so leaves your unattended family and home vulnerable to potential robbers. If you do post pictures from the trip, don't provide the details such as how long you will be away.

• Avoid posting "lack-of-judgment" statements, thoughts, or pictures. Most social networking sites "cache" their content meaning that there are backups and it is never deleted even if you think it has been. Phones with cameras can be dangerous tools if proper judgment is not exercised!

Whether you become a social network "junkie" who feels the need to update your status every three minutes or the occasional user who posts updates only when life's big events happen, social networks offer enjoyment and a level of interaction unlike that offered by another other communication tool. Start slowly and proceed cautiously. Enjoy. ■

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