Sports Turf Manager
FOR BETTER, SAFER SPORTS TURF. AUTUMN 2010. VOL. 23. NO. 3.

STA Field Day Highlight: Putting IPM Into Action

Dr. Katerina Jordan, Department of Plant Agriculture, University of Guelph

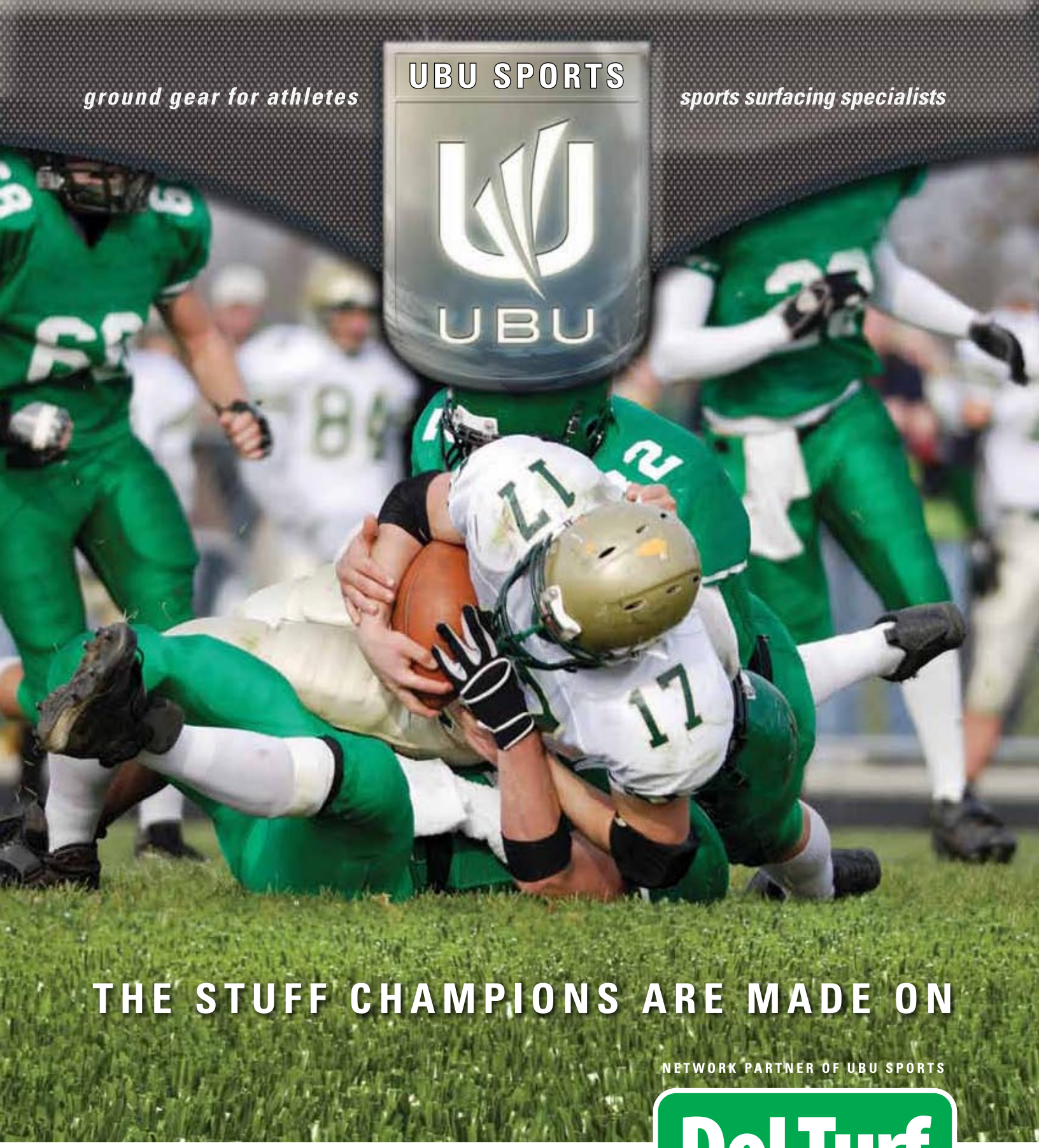
The implementation of the Cosmetic Pesticides Ban in Ontario has led to some pest control challenges for athletic field managers province-wide. With the amount of play that so many fields are subjected to throughout the season, the need for pest control is critical to maintain a safe playing surface. With one fewer pest management tool available to combat weeds and insects, a change in management methods is needed. Although many turf managers feel that pesticides are the top weapons in their arsenal, in truth many of you should realize that your ability to adapt and make decisions is even more valuable. This article is intended to provide tips for effective integrated pest management that are sustainable and utilize the most important tools in the box – your knowledge and experience.

MORE FIELD DAY COVERAGE
Continued inside on pg. 8

The first point, and I can't stress this enough, is taking the opportunity to remain educated as much as possible in pest management. Too often, the use of a quick fix like pesticides can take the place of keeping up on understanding new pests and learning about and trying alternative cultural practices. Then when the routine practice that is so relied upon is taken away, you find yourself already behind in new product information or making sure that you know your pests. Take advantage of field days, conferences and even spending a little time each week on the internet to really have a thorough understanding of the pests you are likely to encounter. The key to properly managing pests and abiotic stresses is understanding the life cycles of the various weeds, insects and even the desirable turf, as well as the conditions under which they all thrive.

Integrated pest management involves the use of all available techniques to suppress pests in an effective and environmentally sound manner in an effort to sustain a healthy landscape. **>>> pg 14**

Inside Features



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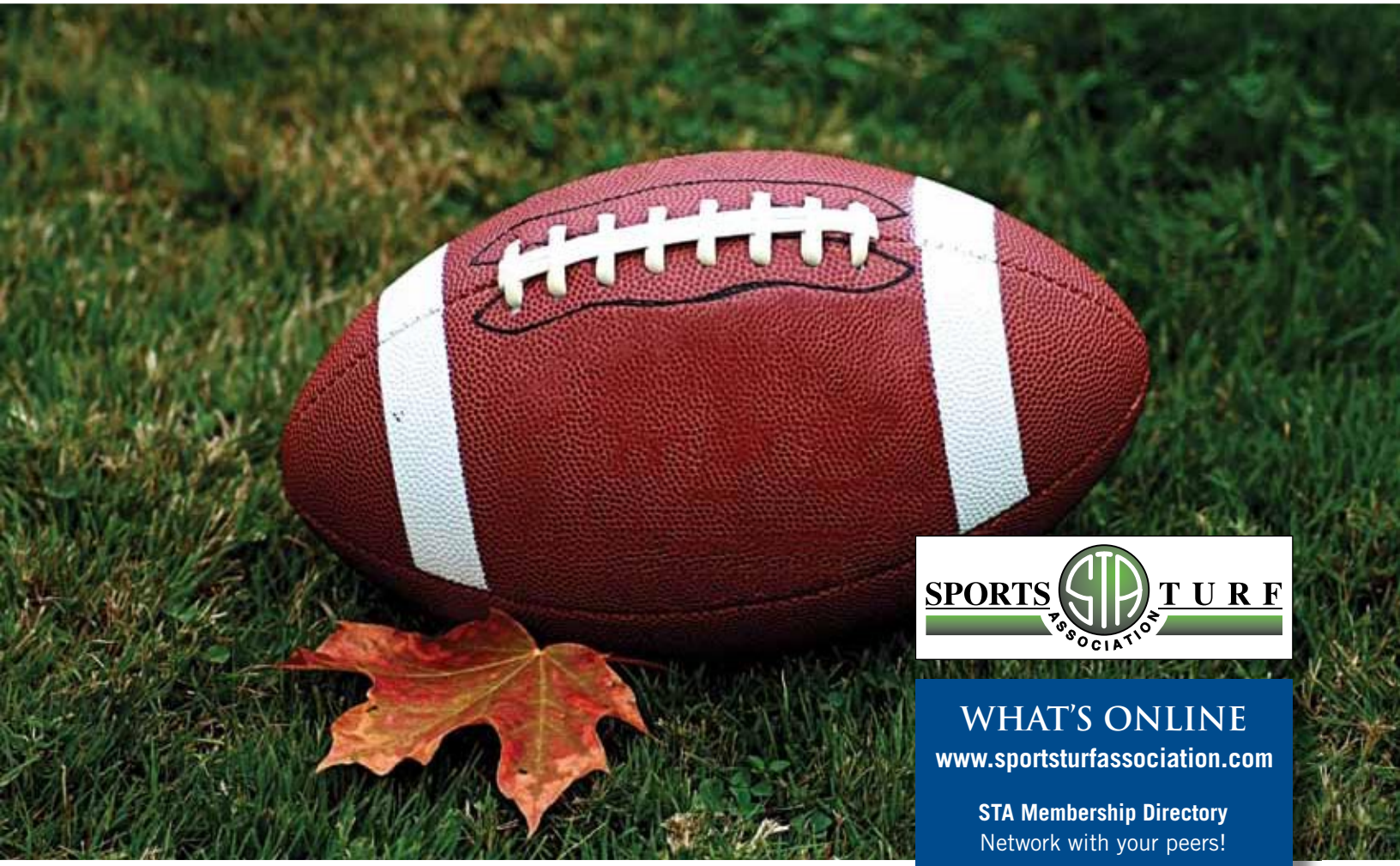
Autumn – the reprieve from Summer. ~Mike Garofalo, Pulling Onions



Inside this issue...

REGULAR COLUMNS, DEPARTMENTS & SMALL FEATURES

Deadline for Winter 2010 Sports Turf Manager: November 5th.

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Sports Turf Manager

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President's Desk

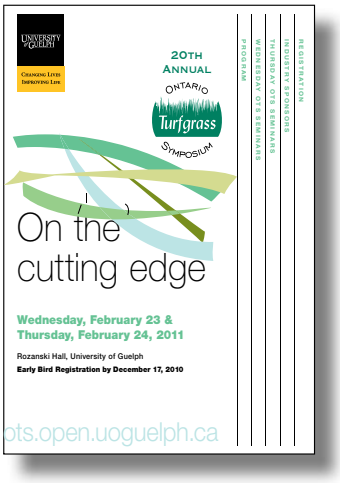
BY PAUL GILLEN

We are coming to the end of what has been the second warmest year on record here in southern Ontario. While that has been great for outdoor activities, it has provided challenges for those responsible for maintaining turf, especially in light of water restrictions and the first full year under the pesticides ban. That being said, watching the resilience and ingenuity of management and staff to get the best possible results under such challenging conditions is one of the reasons that I really enjoy this industry.

The Summer Operational Forum was held on June 23 in association with our Parks and Open Space Alliance (POSA) partners. With one in every seven Canadians living with some form of disability, our theme, Accessibility in Ontario's Parks and Open Spaces, was – and is – so very, very important. If you missed the event, there are some valuable resources available from the organizations that provided sessions: City of Toronto (www.toronto.ca), Ministry of Community and Social Services (www.AccessON.ca), Active Living Alliance and the All Abilities Welcome Campaign (www.allabilitieswelcome.ca), and Variety Village (www.varietyontario.ca).

Continuing with POSA events, we worked overtime to pull together the first POSA "Introduction to Synthetic Turf and Maintenance" training sessions held October 28 and 29 at the Hershey Sports Zone, Mississauga (just about the time you should be receiving this issue of Sports Turf Manager!). The workshops covered every aspect of synthetic turf from planning and budgeting to bid proposal preparation and evaluation, to construction, installation and maintenance considerations.

Our Annual Field Day was held on September 23 at the Hespeler Beehive Hall and Optimist Park in Cambridge. While there were some challenges for the committee this year, the day was an unqualified success. Our guest speakers, Dr. John Sorochan from the University of Tennessee, and Dr. Katerina Jordan and Dr. Eric Lyons from the University of Guelph, provided an array of insights into sports turf maintenance. Everyone in attendance seemed to take something new away from the day of seminars and field demonstrations. Our sincere thanks to the many sponsors and exhibitors for their continued support and to Paul Turner, Bob Kennedy and the rest of the committee for their efforts on behalf of the association.



Finally, the Ontario Turfgrass Symposium, On the Cutting Edge, is scheduled for February 23 and 24 at the University of Guelph. Watch your mail and visit www.ots.open.uoguelph.ca for all the details as they become available. We are especially pleased that this year Kim Heck, Executive Director of the Sports Turf Managers Association in the US, will be part of the program.

Winter will soon be upon us – a time to catch our breath and start preparations for next year. Until we chat again,

Looking for Turfgrass Information? Search the TGIF! Here's an Example.

Keyword: Winter preparation **Number of titles retrieved:** 29

Among the top 6: 1) January football diary 2009: [Frosty mornings], 2) Winter blues, 3) Sports field management practices – preparing a field for winter, 4) Jump to it, 5) How to prep fields for winter: All summer long you coddled and nursed your turf. The playing fields looked great. Now, however, it's time to put that grass to bed for winter, and 6) Taking on winter: The basics of irrigation system blowouts.

Turfgrass Information Center

How do I do this? STA members enjoy complete subscriber access to the Turfgrass Information File via the Michael J. Bladon Link in the Members Only section of the STA website. Login and start searching at www.sportsturfassociation.com!

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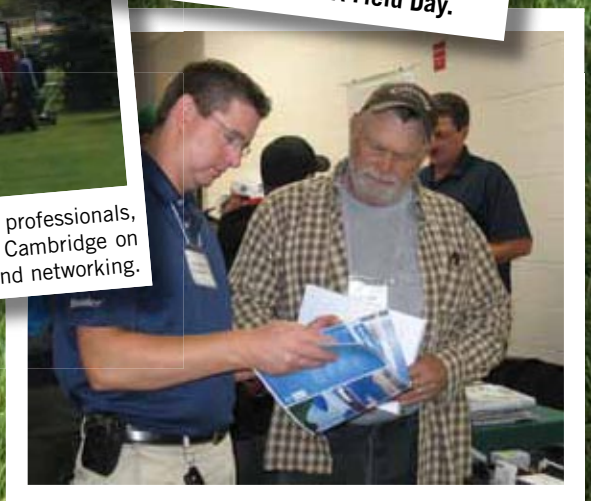
Former STA President and Sports Turf Manager editor Mike Bladon and Turf & Recreation editor Mike Jiggens (right) at the STA Field Day.

STA Annual Field Day. Over 200 sports turf professionals, students and industry suppliers gathered in Cambridge on September 23 for a great day of education and networking.



Alan Streatch, Elderbank, NS
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Event Calendar

ASSOCIATION EVENTS ARE HIGHLIGHTED IN GREEN

November 12. Variety Village 14th Annual Active Living Conference. Scarborough, ON, www.varietyontario.ca

December 17. Early Bird Registration Deadline. Ontario Turfgrass Symposium. Info: 519-767-5000, www.ots.open.uoguelph.ca

January 11-13. Landscape Ontario Congress. Toronto, ON, www.locongress.com

January 11-15. Sports Turf Managers Association 22nd Annual Conference & Exhibition. Austin, TX, www.stma.org
Note: STA members can register at STMA member rates!

January 12-14. Ontario Golf Superintendents Association. Ontario Golf Course Management Conference and Trade Show Windsor, ON, www.golfsupers.on.ca

January 31-February 25. University of Guelph Turf Managers' Short Course. Guelph, ON, 519-767-5000, http://tmsc.open.uoguelph.ca

February 23 & 24. Ontario Turfgrass Symposium: On the Cutting Edge. University of Guelph, Guelph, ON, 519-767-5000, www.ots.open.uoguelph.ca

February 23. Sports Turf Association Annual General Meeting. University of Guelph, Guelph, ON (during the Ontario Turfgrass Symposium) Info: 519-763-9431, www.sportsturfassociation.com

March 4-8. Canadian Golf Superintendents Association & the Western Canada Turfgrass Association Canadian International Turfgrass Conference & Trade Show Vancouver, BC, Info: www.golfsupers.com, www.wctaturf.com

If you have an industry-related event you'd like publicized, contact Lee at 519-763-9431, info@sportsturfassociation.com.

TURF TRADES
Employment Bulletin Board

Are you advertising a position? Are you searching for a job? Target your audience or refine your search with Turf Trades, an online resource for all staffing levels and areas of the sports turf industry. Employment Bulletin Board ads run for 60 days with an additional 30 days available at 1/2 the price. Cost including HST is $84.75 for STA members and $113 for non-members for the initial 60 day period. Payment by cheque (Canada only), Ameriican Express, MasterCard or Visa must accompany the job description. Jobs will be posted in a standard page format.

Contact Lee Huether at the office at 519-763-9431, info@sportsturfassociation.com

Sports Turf Association Field Day

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Continuing Success Year After Year...

Kent McVittie, Commissioner of Community Services for the City of Cambridge, together with STA Director Bob Kennedy, welcomed attendees to the Hespeler Beehive Hall/Optimist Park for the Sports Turf Association Field Day on September 23. The event, now in its twenty-third year, attracted more than two hundred sports turf professionals, students and suppliers to the industry. In the words of one enthusiastic participant, "Great food! Excellent speakers, supplier showcase and field demos. Thanks!" We couldn't have said it better ourselves.

THANK YOU!

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Sports Turf Association Field Day


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Member & Facility Profiles

CLIFF TOWERS, SUPERVISOR OF PARKS OPERATIONS, CITY OF MISSISSAUGA

Interview With Supervisor Cliff Towers

What kind of team do you work with? I work with an awesome Parks/Forestry Department that provides excellent customer service to both internal and external customers.

What are you and your team responsible for? Our team works in the City of Mississauga's North-East District. We look after all of the horticultural, sports turf, playgrounds and general park maintenance. Some of the high profile facilities under our care are the Hershey Sports Zone, Frank McKechnie Community Centre, Mississauga Valley Park and Dunton Athletic Fields.

Cliff Towers. Supervisor of Parks Operations
City of Mississauga, Ontario

What is the biggest challenge in your job? To continue to be proactive to engage the environmental challenges we will be faced with in the future.

What is the most satisfying part, what makes the job worthwhile for you? I love to empower staff to use their knowledge base/creativity to be innovative in the workplace. I also love working outdoors and interacting with staff and the public.

What is the biggest misconception about your job? That we provide a soft service to the community. The service we provide to the public is of vital importance. It gives individuals the chance to escape from the pressures they are faced with on a day-to-day basis. The service we provide enhances quality of life.

What is your educational/employment background? I am a Horticultural Landscaper Greenskeeper/Horticultural Nursery Greenhouse Worker, and have worked in the horticultural industry for the last 30 years.

Tell us about your family. I have a wonderful wife Barb to whom I have been married for 23 years. I have a daughter Amy (22), and a son Andrew (16), who are both amazing talented individuals.

If you are interested in being featured in this column, please contact Lee Huether at the STA office.

What do you enjoy doing outside of the workplace? We are a very musical family and have a studio in the basement of our house.

How has the industry changed and in what direction(s) would you like to see the industry, as a whole, move towards? I believe we have become a lot more conscious about workplace safety and think we should continue to look for opportunities to improve/practice due diligence.

What do you consider to be the biggest benefit of being a member of the STA? It is awesome to be able to collaborate in the industry and stay up to speed with any new developments.

HERSHEY SPORTS ZONE, MISSISSAUGA, ONTARIO

General information regarding the facility. Hershey Sports Zone North has two outdoor and one indoor artificial turf soccer fields, an indoor basketball facility, gymnastic facility, main bowl hockey facility, and four community hockey rinks. Hershey Sports Zone South has two outdoor artificial soccer fields, four community hockey rinks, one major cricket field, a skateboard facility, splash pad/playground, outdoor basketball court, naturalized park settings, and a leash-free dog run. The Hershey Sports Zone North & South comprise 136 acres in total.

Name, location of facility(s). Hershey Sports Zone North, located at 5500 Rose Cherry Way, and Hershey Sports Zone South, located at 705 Matheson Boulevard East.

How many employees are involved with turf care at this facility? Two full time staff and ten seasonal staff.

What is the primary type of turfgrass? Name of varieties. Perennial rye and Kentucky blue.

Is yearly overseeding part of your maintenance program? Yes. We overseed in the spring, summer and fall. **How many times do you fertilize?** Five times per year. **Do you aerate? Topdress?** Yes. We aerate five times per year and top-dress as needed.

Are community user groups involved or have they been involved in the construction/maintenance of this facility? In what manner? We have volunteer community groups that help pick up garbage and plant trees/shrubs.

How many hours per year are the fields permitted? Who permits them? Are the fields ever closed during the season to give them a rest? How much input do you have in the amount and timing of use? We permit our natural turf fields from May until September 30 and permit our outdoor artificial turf from March until November, weather permitting. We close our natural turf fields when we get inclement weather and can often move groups from natural turf facilities onto the artificial turf when we get rain. Local community groups permit our fields as well as other external customers.

Putting IPM Into Action Using Your Own Valuable Resources

Dr. Katerina Jordan, Department of Plant Agriculture, University of Guelph

FIELD DAY HIGHLIGHT

Continued from the cover.

Although IPM often uses pesticides as one of the tools for pest management, it is not a requirement, and the remainder of the techniques can be very effective at developing an effective management plan for most pests. The main fundamentals that are applicable to athletic field management include proper identification of pests and potential problems, proper monitoring and scouting, stress management for healthier turf, and a combination of the control options at your disposal.

Proper Pest & Symptom Identification

The first step in being able to prevent pest problems is to know which pests are a potential threat and being able to recognize both the pests themselves as well as the damage that they can cause. In addition, many symptoms are often caused by abiotic factors, including drought, fertility issues, heat and compaction. It is of equal importance that you are able to distinguish between symptoms caused by pest damage and those caused by an abiotic stressor. This means having a thorough understanding of insect life cycles, feeding habits, and the symptoms that they cause.

For weeds, remember that they are not really pests, as they do not harm the turfgrass plants. They are, however, indicators of poor growing conditions or stress that creates voids. Weeds are extremely competitive and are able to fill voids often more quickly than the turfgrass plants. Proper identification of weeds that are present in your fields will help with management and also with identifying conditions such as compaction, low fertility or excess moisture. Three of the more common weeds seen on athletic fields include plantain, clover and knotweed (pictured above) and all are indicative of low fertility, drought and compaction.

Insect damage becomes more difficult to identify and control as symptoms are somewhat non-descript and damage can occur rather quickly. However, proper identification of the various insects that are potential pests can help reduce symptom development through effective and well-timed cultural practices. The most common insect pests seen on athletic fields are usually white grubs (European chafer,

Top. Insect pests seen on turfgrass fields. **Left.** European chafer (Rhizotrogus majalis) **Right.** European cranefly larvae (Tipula paludosa). Photos courtesy of Pam Charbonneau.

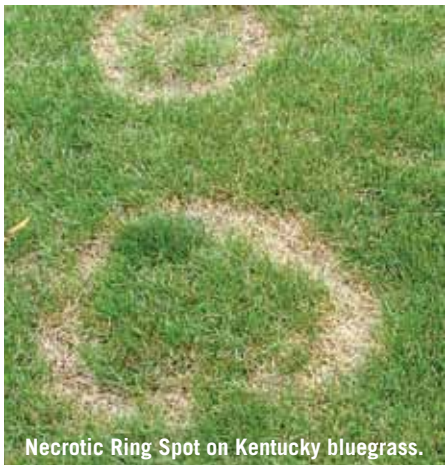
Above. Common weeds found on athletic field turf. **Left.** Broadleaf plantain (Plantago major). **Middle.** Clover (Trifolium repens). **Right.** Prostrate knotweed (Polygonum aviculare). Photo courtesy of Eric Lyons.

May/June beetle and Japanese beetle) and leatherjackets. Damage from white grubs is difficult to see before the turf is severely affected, so it is important to be on the lookout for any evidence of adult beetles or skunk feeding. For leatherjackets, symptoms should not be too extreme, but note excess activity of the adult European crane fly, especially toward the end of the summer, to give you an idea of whether or not they are likely to be present in your turf.

Diseases are fortunately not an issue on athletic fields, but the occasional necrotic ring spot (below) or rust can appear on stressed turf. The former is usually an indicator of excess thatch levels and low nitrogen while the presence of rust is usually evidence that fertility (especially nitrogen) is low and that there may be excess shade in the area.

Table 1: Common turfgrass weeds and the underlying conditions that their presence indicates. Adapted from Turf IPM Manual, OMAFRA, 2003.

Weed	Underlying Condition
Black medick (Medicago lupulina)	Low fertility, drought
Chickweed (Stellaria media)	Thin turf, excess moisture, shade
Clover (Trifolium repens)	Low N, drought, compaction
Crabgrass (Digitaria spp.)	Thin turf, low fertility, compaction
Moss (Various species)	Heavy shade, low fertility, low pH, compaction
Plantain (Plantago spp.)	Low fertility, drought, low HOC
Prostrate knotweed (Polygonum aviculare)	Compaction, low fertility, drought
Rough bluegrass (Poa trivialis)	High fertility, excess moisture, shade



Necrotic Ring Spot on Kentucky bluegrass.

Monitoring

The second fundamental that is of key importance in managing pests on athletic fields is proper monitoring or scouting. In order to reduce the effects of weeds, insects and diseases on managed turfgrasses, issues need to be assessed early on as this allows for the option of managing them through cultural practices. Monitoring involves carefully looking over your fields to make note of any changes in plant health or presence of weeds, insects, odd symptoms, etc. Some type of monitoring should be done each time that you are on a field and can be done by anyone who is working on a particular site. If you are at the managerial level, your best chance of success in recognizing issues early on is to train all of your employees to recognize different symptoms as well as early signs of pest presence. If you are one of the people who maintains the fields and sees them most often, make sure you keep an eye out for any changes in turf health, presence of new weeds or symptoms of insect damage or disease.

As important as monitoring for symptoms or signs of pests is, it is equally critical to keep accurate records of everything that you see. You should have a map of each field that is under your care and every time that you see something out of the ordinary make sure that you mark it down, by location on the field, so that there is a permanent record of it. This allows you to note any patterns of damage that may be chronic or that might hint at unfavourable environmental conditions or damaging usage patterns that could potentially be amended.

In addition, with enough data taken over time, you may find that you are able to predict when issues are going to occur and this can help you prevent problems in the first place. Another advantage of good record keeping is that it allows you to monitor the progress of symptom development, weed growth or insect populations over time. One of the best suggestions that I have heard on how to do this easily is with a map and various coloured highlighter pens with each colour representing a different issue. In addition to keeping track of turf symptoms or pest presence, you should also be noting weather conditions, if possible, specifically at your locations. Install a simple rain gauge to get an idea of the amount of water your fields have received and keep track of regional temperatures throughout the season. This will allow you to correlate any problems that you might encounter with weather conditions.

Finally, be sure that you keep good records of your management practices – mowing height and frequency, fertilizer rate and application dates, cultivation types and dates, overseeding (including species, rate and date), irrigation (if available) or any other practices performed for growth of the turf. When combined with the pest monitoring data, you might find that certain pests can act as indicators of unhealthy conditions. This is especially the case with weeds as they take advantage of voids or weakened, thin areas. As such, they are often indicators of issues that may exist with the soil or other growing conditions (see Table 1 above).

Stress Management

An often overlooked fundamental to remember as part of your pest management plan is stress management. In many cases, pests are present primarily because the desirable turf is under stress and thinned areas have become vulnerable to invasion from weeds or to symptom development from insects or diseases. The first line of defense against weeds and insect damage is not only keeping your turf at the appropriate height, but also mowing your fields

Above. Material collected as a result of vertical mowing. **Inset.** Cores from aeration done to improve soil compaction on an athletic field (photo courtesy of Eric Lyons).

frequently enough to ensure that you only remove 1/3 of the leaf blade at any cutting. You are better off mowing twice per week and keeping your turf a little bit higher to compete against weeds rather than mowing infrequently and cutting it down too short each time.

Fertility is also of extreme importance in reducing stress in your turfgrass plants. Adequate fertilizer levels in your plants allow for defense against weed invasion, rapid recovery from injury due to excess use, and growing out of insect damage. Timing and source of your fertilizer applications need to be appropriate as you want to avoid excess growth during times of heat and stress while allowing plants to recover from feeding or injury. Consider having regular soil tests performed as this information can tell you about the amount of phosphorus, potassium or other essential nutrients your turf might be lacking.

Cultivation is also a significant cultural practice that is key on athletic fields. With the amount of traffic that most fields see in a season, compaction is sure to occur in a short period of time. In addition to making the fields less safe for play, compaction also reduces the health of the turf by restricting root growth and subsequently not allowing the plants to access necessary water and nutrients. Core aerification should be done at least once per year and ideally both in the spring and fall on these high traffic areas. Also consider incorporating deep tine aerification periodically to break apart soil deeper in the rootzone. Keep an eye on thatch levels and use vertical mowing to remove excess thatch when needed. Thatch can lead to issues with water repellency (hydrophobicity), root restriction, soil compaction and reduced water retention. The final practice that is vital in maintaining healthy turf is irrigation. Although most of you likely do not have irrigation systems installed in any of your fields, this is something to consider saving for with any capital funds that you are given. One of the best defenses against weeds is properly timed irrigation and many insects can be managed through proper management of soil moisture.

Combination of Controls

The last fundamental to keep in mind is that of using a combination of control measures. In order for a pest management system to work over a long period of time, you need to take an integrated approach and utilize all methods at your disposal. This ensures that no one method is relied upon and gives you numerous options for dealing with pests. Cultural management has been discussed under the section of stress management and is the first defense against pest presence and damage. Remember to keep in mind that many pests are indicators of unhealthy turf and their presence is often a reminder that certain practices are possibly being overlooked.

Another method for dealing with pests is physical or mechanical removal. For insects, this may involve the use of pheromone traps (e.g. for Japanese beetle), but be sure to situate your traps away from your desirable turf as it is suggested that these traps actually attract insects to your site. Physical control with weeds could involve torching or hand pulling, a labour-intensive method that can be quite successful when weeds are still small.

A few biological control options are available for athletic field managers for both weed and insect control. The one thing that you need to be aware of with the use of biological control agents is that they require specific conditions in which to be effective, so the more you know and understand about how they work, the better chance you have for success with them.

Finally, there are some available chemical controls that are exempt from the provincial ban, primarily for use on weeds. As with any pesticide, be sure to read the label and follow instructions carefully to increase the efficacy and reduce any potential harmful effects on your turf.

In the End…

One of the most important points that I hope you take from this article is to remember that you truly are the best tool that you have. The more you educate yourself and understand what you are fighting in pest management, the more successful you will be in combating turfgrass pests without the use of conventional pesticides. Remember to get back to your basics – mowing, fertility, cultivation and if available, irrigation. Also, think about substituting the funds that used to be allocated for pesticides to grass seed as increasing the number of turfgrass plants is one of the best defenses you can have against most pests. Finally, remember to keep up with early monitoring and record keeping and do what you can to keep your turf as healthy as possible. With a bit more labour and some good practices, you should be able to maintain beautiful turf throughout the season.

Field Day Highlight: Managing Sand-Based Athletic Fields

John Sorochan, Ph.D., Department of Plant Sciences, University of Tennessee

Turfgrasses subjected to traffic are generally assessed by their ability to resist wear and recuperate. Because athletic fields receive an abundance of traffic, maintaining quality turf stands has always been a challenge. Root zone selection and developing sound management practices are two important components to maintaining quality athletic fields. Specifically, constructing a sand-based athletic field and properly implementing the primary cultural practices of irrigation, mowing, fertilization and cultivation will help maintain the most consistent turfgrass playing surface.

Generally, the root zone of an athletic field is either native soil or sand-based. Native soil root zones high in silt plus clay provide exceptional soil strength (soil stability); however, traffic from play often causes poor drainage and soil compaction to occur. In contrast, sand-based root zones provide smooth and uniform playing surfaces that resist compaction and have adequate drainage. However, sand-based root zones typically have low nutrient and water holding capacities. In addition, sands lack cohesion which can cause stability problems. Variables to control stability problems associated with sand-based root zones include: particle size distribution, average particle size, particle shape, soil density and soil amendments.

A well-graded root zone in which there is a significant distribution among sand particle sizes is preferred for sand-based athletic fields. Research by Dr. Jason Henderson (Asst. Professor, University of Connecticut) as a graduate student at Michigan State University determined that a sand-based root zone with 10% silt plus clay will provide both soil stability and adequate drainage for athletic fields. The sand content root zone near maximum density will retain macro pore space (air-filled pores) for rapid drainage, and the addition of about 10% silt plus clay will provide the soil stability and the increase in nutrient and water holding capacity. Unfortunately, the high costs and quality of available native soil to mix with the sand root zone can often limit blending the two.

STA FIELD DAY
Coverage from September 23, 2010.

Above. Sand channel after the drill and fill, Shields Watkins Field, Neyland Stadium, Knoxville, TN.

In contrast to athletic fields, the United States Golf Association specifications for putting green construction limit the amount of silt plus clay percentages (not more than 5 and 3%, respectively) that can be used in order to provide the desired infiltration (drainage) rates. In addition, very fine sand cannot be more than 5%, and the very fine sand and silt plus clay cannot be over 10% of the total root zone mix. Because the expectations for the use of an athletic field playing surface are extremely different than those for a putting green surface, it makes sense that Dr. Henderson's research recommends slightly higher percentages of silt plus clay. Higher silt plus clay percentages reduce soil infiltration rates, but provide firmer and more stable playing surfaces.

In addition to building a sand-based athletic field, properly implementing the primary cultural practices of irrigation, mowing, fertilization and cultivation will help maintain the most consistent turfgrass playing surface. Typically, sand-based athletic fields require more frequent irrigation compared to a native soil athletic field. This is because of the low water holding capacity.

Turfgrass water requirements vary depending on the time of year and weather conditions. Actively growing turfgrasses will generally require about 1 to 1.5 inches of water per week. The water used by a turfgrass plant is predominantly absorbed by the roots from the soil and can be supplied via natural rainfall events and supplemental irrigation. The amount of water that needs to be applied by supplemental irrigation will depend on how much water is available in the soil and how much the turfgrass demands. For example, irrigation applications will be more frequent during sunny days with high temperatures, low humidity and high winds than during cloudy days where humidity levels are high and temperatures are cool.

Thus, any factor that contributes to the turf transpiring more (using more water) and the soil losing moisture via evaporation would warrant increased irrigation scheduling. Therefore, it would not be accurate to suggest irrigation once, twice or three times per week because weather patterns change frequently. Instead, irrigation requirements should be monitored daily for turf watering needs.

Soil nutrient tests should be conducted regularly and subsequent fertilizer applications should be done for any nutrient deficiencies that occur. Nitrogen fertility for sand-based root zones should be more light (low N) and frequent if using water soluble nitrogen fertilizers because of the low nutrient holding capacity. Using slow release nitrogen fertilizers such as poly coated urea can reduce application frequencies and allow for increased nitrogen rates.

Mowing should be done regularly enough to not exceed the one third rule. This rule states that no more than one third of the leaf material should be removed at any mowing. Optimal mowing heights for cool-season athletic fields (Kentucky bluegrass and perennial ryegrass) are between 1 to 2.5 inches and 0.75 to 1.25 inches for warm-season athletic fields (bermudagrass and zoysiagrass). In addition, regular mower maintenance including reel or blade sharpening will assure the highest quality of cut.

Turfgrass vigor increases with the proper implementation of irrigation, fertility and mowing practices; therefore, as turfgrass vigor increases, irrigation, fertility and mowing requirements also increase. Sand-based athletic fields typically do not become compacted; however, layering problems as a result of organic matter accumulation often occur over time. Regular cultivation practices of aerification and topdressing are required to dilute organic matter accumulation and potential layering problems that build up. Whether it is Kentucky bluegrass for a cool-season athletic field or bermudagrass for a warm-season athletic field, organic matter accumulation as a result of decomposing roots, rhizomes and/or stolons, and clippings contribute to an increase in organic matter at or near the root zone surface that can over time impede infiltration rates.

This problem is especially pronounced on overseeded bermudagrass athletic fields in the transition zone and southern climates where turfgrass growth from both cool and warm-season turf occurs 10 to 12 months of the year. For example, Shields Watkins Field at Neyland Stadium in Knoxville, TN was constructed with a sand-based root zone that had 0.5% organic matter by weight. Over a ten year period, even with regular core aerification and sand topdressing, a 4 to 6% organic matter layer by weight formed in the top 5 inches of the 12 inch root zone.

For Bob Campbell, University of Tennessee Athletic Field Manager, the increase in organic matter was not high enough to significantly cause drainage problems, but infiltration rates decreased from the original rates. Because Shield Watkins Field is an overseeded athletic field, organic matter accumulation for the two turf species being used accumulates for ten months of the year. Compounding the problem is the fact that core aerification is only being done during the early summer and regular sand topdressing amounts and frequencies are limited due to the fall football season. Since the organic matter accumulation occurred over a 5" depth, conventional core aerification cannot penetrate deep enough to break up the layering profile, but coupled with sand topdressing the percent organic matter accumulation is diluted.

In order to address the layering issue, Campbell used deep tine drill and fill to create a series of channels backfilled with the original sand blend for water infiltration (see photo on adjacent page). The increase in organic matter was not necessarily a major problem, but it was an issue that needed to be dealt with in regards to water infiltration. Conversely, the increase in organic matter by weight over time has helped increase the nutrient holding and water holding capacities of the root zone.

With the ever increasing demand and use for athletic fields, the effects of wear as a result of traffic continue to be a challenge for maintaining quality sports fields. However, proper root zone selection and implementing sound management practices (irrigation, mowing, fertility and cultivation) will help provide more consistent, quality athletic fields.

Editors Note: Under Canadian conditions where bermudagrass is not grown, such a high buildup of thatch would not occur.

What Smells Like Sour Milk & Controls Leguminous Weeds?

Pam Charbonneau, OMAFRA Turfgrass Specialist

As usual there has been a flurry of work at the Guelph Turfgrass Institute evaluating how effective some of the new bio-pesticides are at controlling turf pests. Two broadleaf herbicides came on the market this summer, Fiesta™ and Organo-sol®, and were the suject of research by myself and Cynthia Siva, a graduate student of Dr. Katerina Jordan. We both had Fiesta in our trials and Dr. Ken Carey also did several crop tolerance and rate trials with Fiesta. All of these results will be reported on at the Ontario Turfgrass Symposium February 23-24 at the University of Guelph. In this article, I'll focus on Organo-sol's effectiveness in our trials.

Organo-sol is a product developed by Lacto Pro-Tech Inc., which commercializes products made from dairy ingredients that come from a certified food plant. It is a division of the cheese manufacturing company Saputo. Organo-sol is manufactured from lacto-fermented dairy ingredients and the active ingredients are citric and lactic acid (produced by lactic acid bacteria). Summer student Matthew Barnett thought it smelled like a mixture of orange juice and rotten milk and I thought it smelled like baby vomit. If you look at the ingredients, it is pretty close to both!

Organo-sol is labelled for the control of bird's-foot trefoil, black medick, clover and wood sorrel in established lawns. The product is applied as a mixture of 25% Organo-Sol, 3% surfactant and 72% water and applied at a rate of 200 mL per m^2. The surfactants on the label include XA Oil Concentrate, Kornoil Concentrate and Assist. The application needs to be repeated every 14 days for a total of five applications.

The Research Trial

The trial was conducted following the label rate and timing. Treatments were applied on May 26, June 7, June 21, July 5 and July 19, 2010. The label mixing instructions

EDITOR'S NOTE

See the Summer 2010 issue of Sports Turf Manager where Pam covers the efficacy of fall applied iron chelate, a herbicide for broadleaf weed control.

Figure 1 Above. Organo-sol® treated plot 3 days after treatment showing the grass phytotoxicity. **Figure 2 Inset.** A close-up of grass and weeds treated with Organo-sol showing typical damage several hours after treatment. Notice the damage to clover but not dandelion.

Figure 3. Effect of Organo-sol on Dandelions.

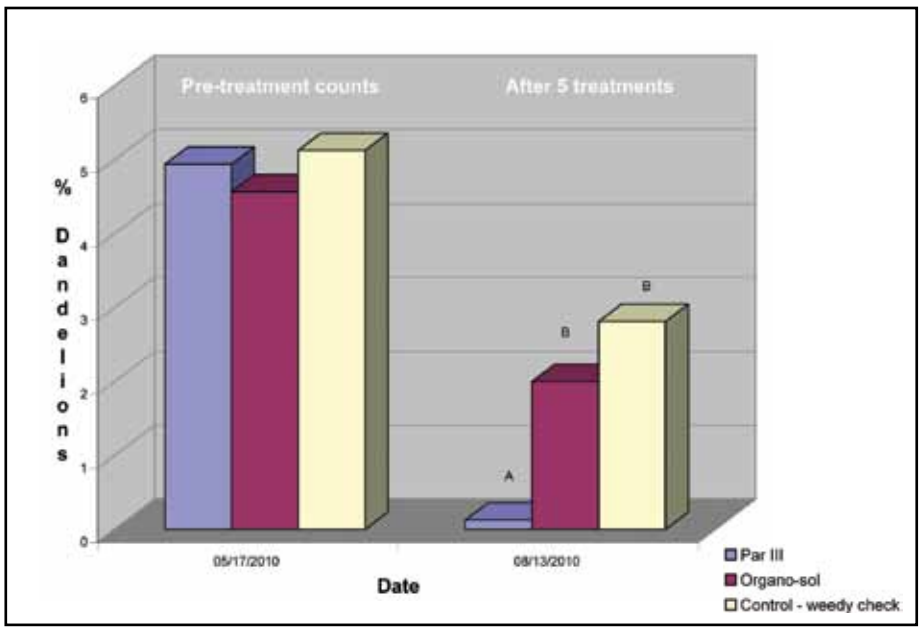
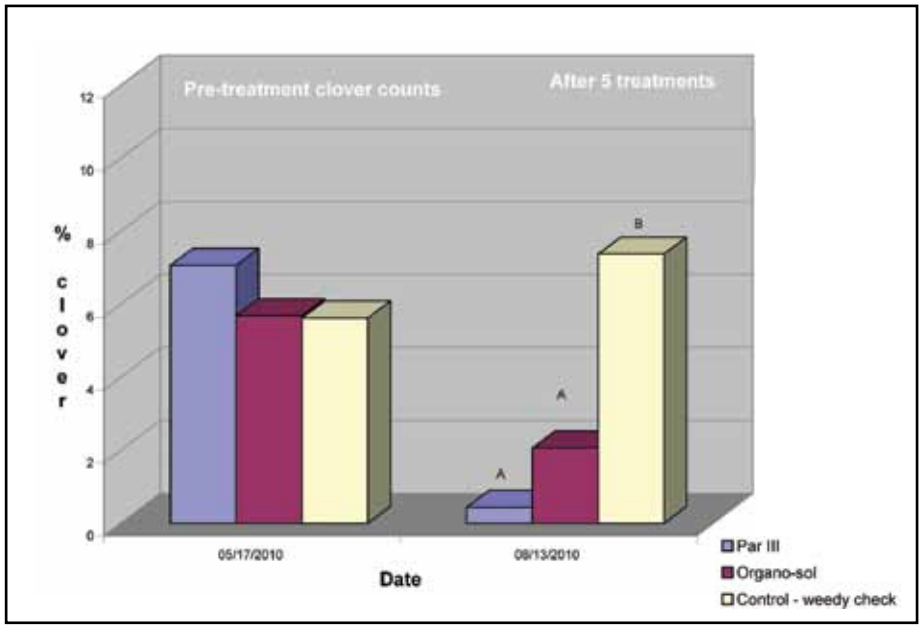


Figure 4. Effect of Organo-sol on Clover.



were followed by a different surfactant that was suggested by Lacto Pro-Tech, LI700 from United Agri-Products. The research site was an area of established turf (a mixture of Kentucky bluegrass and turf-type perennial ryegrass infested with dandelions, black medick, clover, narrow-leaved plantain and other lawn weeds). Turf was maintained as a low maintenance turf with weekly mowings at 6 cm, no supplemental irrigation, and fertilized once a year with 0.5 kg N/100 m^2.

Organo-sol gave poor control of dandelions (but this is known) and good control of clover, black medick and total broadleaf weeds.

The treatments were untreated control, Organo-sol at the label rate, and Par III (a herbicide consisting of 2,4 D, mecoprop and dicamba) applied at label rate. Each treatment was replicated four times in 2 x 2 m plots in a randomized complete block design. Percent cover of each weed species (dandelion, black medick, narrow-leaved plantain, broadleaf plantain, bird's-foot trefoil, clover and mouse-eared chickweed) was recorded in each plot on June 11, June 17, June 30, July 15, July 29 and August 13.

Four randomized point quadrats measuring 60 cm x 60 cm with 25 points in each quadrat (points 10 cm apart) for a total of 100 points in each plot were used to record estimated percent broadleaf weed cover of each of the broadleaf weed species at each assessment date. All measurements were analysed by the appropriate statistical analyses. The only broadleaf weed species that were in high enough numbers to observe significant differences were clover,

dandelion and black medick and total weeds and only these will be reported here.

Results

Visual observations that were made several hours after treatment showed phytotoxicity to the grass and weed leaves turning them light brown to yellow. The grass phytotoxicity lasted for roughly one week after treatment (Figure 1).

Organo-sol gave poor control of dandelions (Figures 2 & 3), but this is known to the company and dandelions do not occur on the Organo-sol label. Organo-sol did give good control of clover (Figure 4), black medick (Figure 5) and total broadleaf weeds (Figure 6). Organo-sol gave the same level of control for clover and black medick as Par III reducing the clover by roughly 70%. Overall, the total weeds were reduced by Organo-sol by 66%, but the reduction was not as great as the reduction in total weeds with Par III, which was a 95% reduction over the untreated control.

When applied according to the label with the addition of the surfactant LI700, Organo-sol did provide significant control for clover, black medick and total broadleaf weeds in this study. Though not reported here, a trial including Organo-sol was conducted by Cynthia Siva for her Master's research project using the surfactant Assist and the efficacy was much lower than with LI700. What is still unclear is if the level of phytotoxicity that occurs after each treatment and lasts for roughly one week will be acceptable in the marketplace. In addition, the smell of the product is unpleasant – this may also impact its acceptability. Lastly, the need for five applications in a season for efficacy may also be a deterrent.

Figure 5. Effect of Organo-sol on Black Medick.

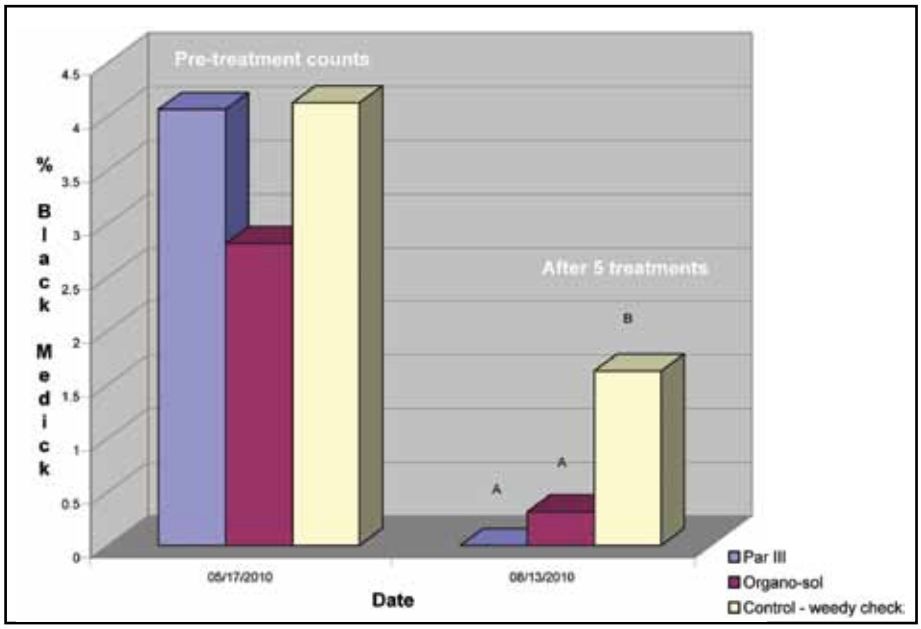
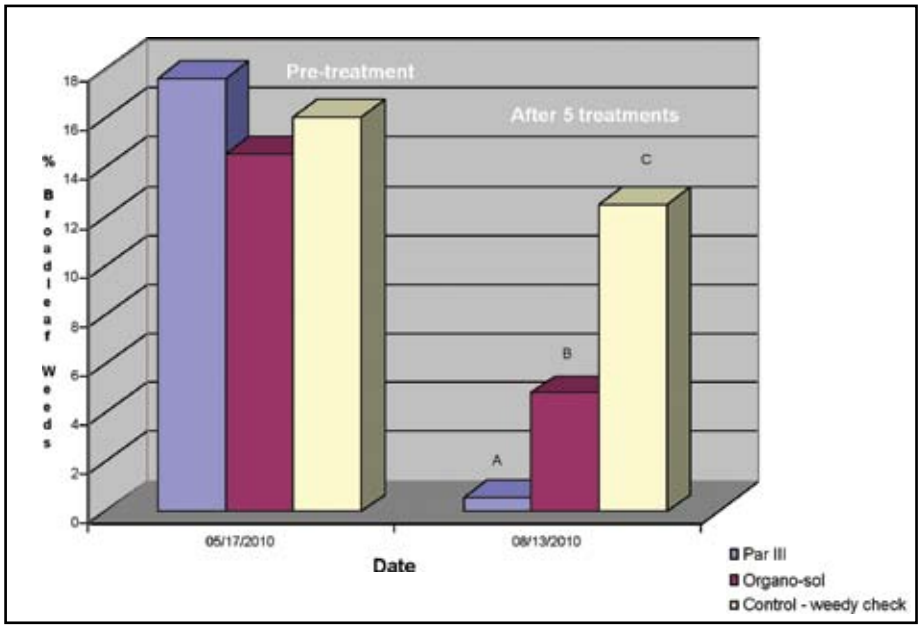


Figure 6. Effect of Organo-sol on Broadleaf Weeds.



Association News

2010 ROBERT W. SHEARD SCHOLARSHIP RECIPIENT

Congratulations Bradley Young!

GUELPH, ON. The Sports Turf Association is pleased to announce the recipient of the 2010 Robert W. Sheard Scholarship. Bradley H. Young is a graduate of the University of Guelph's Associate Diploma in Turfgrass Management and Humber College's Landscape Technician Program. Congratulations, Brad!

As part of the application process, candidates are required to submit an essay on a sports turf-related topic of their choice. Brad has completed his second period as a member of the ground staff at The All England Lawn Tennis and Croquet Club, Wimbledon. Read his essay, "Constructing World Class Tennis Courts" on the next few pages.

The STA Robert W. Sheard Scholarship

In order to encourage, support and provide leadership to those considering a career in the sports turf industry, the STA established a scholarship program in 1993 and has now awarded 28 scholarships. The scholarship program is funded through STA membership fees and is intended to assist with the cost of tuition, books and related expenses.

For scholarship polices, application requirements and an application form, please visit www.sportsturfassociation.com. Submissions for the 2011 award must be received by May 1st for consideration.

LETTER OF APPRECIATION

"Thank you so much for your letter informing me that I am the recipient of the Robert W. Sheard Scholarship. I am pleased to accept the award and hope to live up to the legacy of its namesake.

It is particularly rewarding for me to be honoured by this award having returned to school as a mature student. After working for several years and considering my future, I returned to school at the age of 29 and immediately knew I had chosen the path that was right for me. This early success in the field is particularly gratifying."

Bradley Young

Photos courtesy of Brad Young

Constructing World Class Tennis Courts

Bradley H. Young, 2010 STA Scholarship Recipient

In theory, a grass court can be any piece of flat grass that is large enough to have the proper dimensions on which to play tennis. However, this is not really the case. There are three main elements which make up any grass court – the turf, the soil and the base – and only when all three are in synergy can a proper patch of land be called a grass court.

QUOTABLE QUOTE

"A grass court's playing characteristics (such as the height, speed and trueness of the ball bounce), as well as its durability, depend on the quality of a court's component parts and the skill of the grounds staff in looking after it."[1]

The first step in having a proper grass court is solid construction, where building a good base is the key. Most grass tennis courts are constructed similar to USGA greens. There are specific recommendations that should be followed when constructing a court and the cross-section drawing of a tennis court looks very similar to that of a USGA green. The following construction procedure was carried out at The All England Lawn Tennis and Croquet Club, home of the Wimbledon Tennis Championships.

Construction of a court will vary from site to site based on the type of sub soil present. The first step for any construction project is to do your locates. Before any excavation can begin, a land survey must be done in order to find out where any underground utilities such as water, hydro or phone lines are so that when excavation is done, all utilities can be avoided. Once the survey has been completed, excavation can begin. The ground is excavated to a depth of 18", with an additional trench dug into that for the drainage lines. The drainage lines can be laid in one of two ways, herringbone or grid. Figure 1[2] shows examples of both.

The courts at Wimbledon use the grid system of drainage, where the main 4" line runs down one side of the court and the lateral 3" lines run almost perpendicular to the main line at a slope of 1% so the water will continue to flow. The drainage tile is perforated to allow water to enter.

Once the drainage has been laid, then construction on the drainage layer can begin. This is the first layer that goes in over top of the drainage tiles. The drainage layer is usually made up of washed (dust-free) hard stone between 5/16" and 3/8" that won't crush when compacted. It is comprised of aggregates that are angular so they lock together and compact well while remaining well draining. This layer is approximately 6" thick, but can be thicker depending on site conditions and the sub-soil underneath. The drainage layer is the foundation of the court and one of the key elements in maintaining a successful grass tennis court.

Once the foundation or base has been laid, the next layer to be installed is the

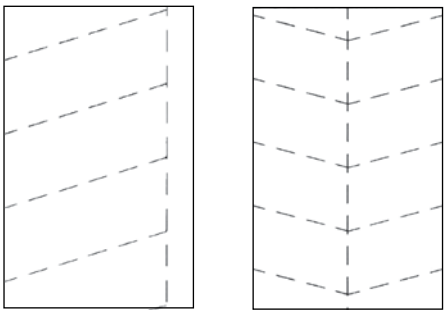


Figure 1. Alternative drainage systems. A grid system is on the left and a herringbone is pictured on the right.

binding layer, similar to a binding layer in a USGA green. This binding layer brings together the base and the topsoil, while preventing the topsoil from moving down into the base. The binding layer is made up of coarse sand and compacted – again to prevent the topsoil layer from penetrating to the foundation. This layer is usually about 2" thick, and although it is made of compacted sand, it is still very porous and allows for water filtration. Careful consideration should be made when choosing the type of sand for this binding layer. It should be lime-free to prevent altering the pH of the topsoil above it.

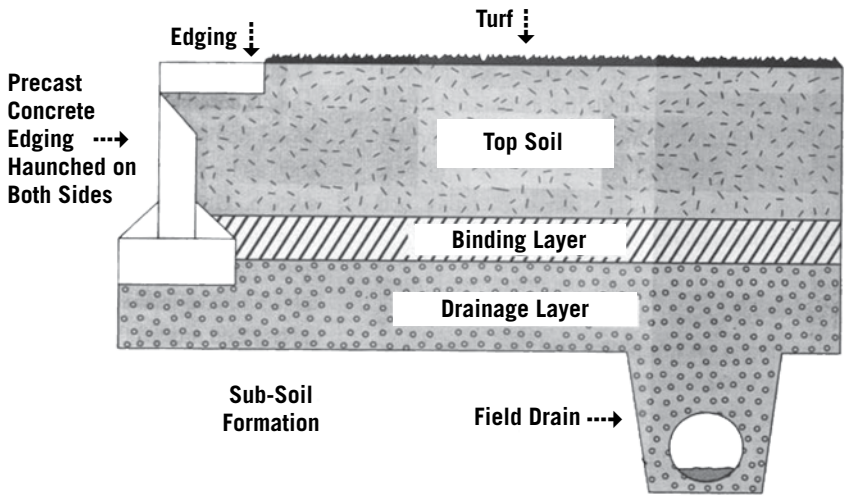
The final layer is the second of the three important elements of a grass court, the topsoil. This layer is usually the thickest of the layers at approximately 10". A soil should be chosen that will be the best possible for grass growth and also compacts well allowing for a firm playing surface. Ideally, the topsoil will contain around 5% organic matter. The courts at Wimbledon contain up to 20% clay in the topsoil to allow for consistency across the courts and firmness. The topsoil layer is laid in 2" lifts, raked, and compacted twice to remain consistent throughout. Installing this layer can be a time consuming and labour intensive procedure.

The edging of a court is made up of concrete with drains on either side to allow for the surface water to run off into a drain. Figure 2[3] shows a typical cross-section of a grass court.

The final portion of building a grass court is of course the grass. There are many species to choose from: creeping bentgrass, annual bluegrass, fine fescues, perennial ryegrass, etc. Some tennis facilities use a mixture of perennial ryegrass and fine fescue; in fact Wimbledon did that up until 2001 at which time they switched to a mixture of different perennial ryegrass cultivars. They made the switch to 100% perennial ryegrass because of its durability and wear tolerance.

"Independent expert research from The Sports Turf Research Institute in Yorkshire, UK, proved that changing the grass seed mix to 100% perennial ryegrass (previously 70% rye/30% creeping red fescue) would be the best way forward to combat wear and enhance court presentation and performance without affecting the perceived speed of the court."[4]

Figure 2. Typical cross-section of a court.



Establishing Grass

There are two obvious options for establishing grass on a new court, sodding and seeding, and there are advantages and disadvantages to both. Sod will create an instant court look, however will still take a while to grow before it can be played on. Sod can be cut and rolled sooner than a seeded court, and will be ready for play a lot faster. However, when laying sod one must ensure the soil that is on the sod is the same as the topsoil on the court. Otherwise, layering will be created, and the court will not drain properly. Also, if sod is not laid properly, it can create bumps and an uneven playing surface.

Seed on the other hand, will create a much more uniform playing surface, use the existing soil as its soil base, and will therefore not create a new layer, allowing for proper drainage. The major downside to seed is that it takes up to one year to establish fully before there can be play on the courts. Wimbledon, despite the amount of time it takes to establish fully, seeds rather than sods all of its courts.

Maintaining A Grass Court

Once the grass on the court has been established, it is up to the ground staff to maintain the high level of quality and playability that is expected at Wimbledon. There is maintenance work done on the courts through three of the four seasons, winter being the only one where little to no work is done. There are, however, growing lights installed on Centre Court at Wimbledon to keep the grass growing throughout the winter months. The grass court playing season usually begins in mid-late May and carries on through to the end of September.

The grass courts at Wimbledon are among the best in the world. The ground staff work tirelessly to ensure that the courts are of the highest quality and performance. For two weeks out of the year, they are beaten and bruised, but have proven to stand the tests of time and competition. I am proud to say that I am among those people working hard to maintain such a high expectation.

References

1, 2 & 3. www.lta.org.uk/Resources/Clubs/Grass%20Courts.pdf
4. www.wimbledon.org/en_GB/about/infosheets/grasscourts_general.html

EDITOR'S NOTE

The cross section of the Wimbledon court corresponds very closely with the specifications for a Class 2 athletic field as described in the STA's Athletic Field Construction Manual. A Class 2 rating is due to the inclusion of 20% clay in the top soil mix.

Industry News

EFFECTS OF CULTURAL PRACTICES ON EXISTING SCHOOL FIELDS

Dol Turf Spearheads Field Research

BOND HEAD, ON. The Simcoe County District School Board, with trial partners Dol Turf Restoration, DCS Agronomics, Sports Turf International, Agrium and Vanden Bussche Irrigation, have begun a two year study on the effects of specific cultural practices and slow release nitrogen products on two existing high school sportsfields.

Dol Turf
RESTORATION | CONSTRUCTION | MANAGEMENT

High school fields take a tremendous, season-long pounding, and with limited budgets school boards have a difficult challenge maintaining safe and playable sports fields. With the help of Dol Turf Restoration and DCS Agronomics, a series of trials using different aeration methods and fertility regimes will be applied to a brand new field (engineered by MMM Group) as well as an older, more established field. All of the field work is being supplied by Dol Turf Restoration, with base line and data analysis by Dave Smith of DCS Agronomics.

The results will be monitored and tracked by state-of-the-art GPS mapping and plant health monitoring systems as well as through visual evaluations. Water usage will be tracked using both weather station and field sensor techniques, with the equipment supplied by Vanden Bussche Irrigation.

Fertility is a critical component to maintaining healthy turf under intense pressure. Several different slow release nitrogen products will be monitored for longevity, turf health and aggressiveness. Agrium is supplying several different nitrogen products for the trials.

Over a two year period, different aeration methods such as deep tining, traditional coring, shattertine and solid tine treatments will be used on randomized, three replication plots. Demonstration areas have also been set up to show the effects of practices such as verticutting and organic amendments.

The end goal is to identify the most effective methods and product applications for a school field environment, which will aid the Simcoe Board to develop the best sports field maintenance specifications for their schools. It is anticipated that results will be presented in 2012. For further information, contact Ken Pavely (kpavely@dolturf.com) or Gord Dol (gdol@dolturf.com) at Dol Turf Restoration, 1-800-794-9664. Visit them online at www.dolturf.com.

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