

Sports Turf Manager

FOR BETTER, SAFER SPORTS TURF. WINTER 2012. VOL. 25. NO. 4

History of Sports Field Turfgrass Surfaces

James B. Beard, PhD, DA, and VMM

Outdoor games, in which teams attempt to hit, carry, kick, or throw some form of a varied-shaped ball into, over, or across the opponents designated goal have a long history in most parts of the world. Early “team” games frequently involved no rules, an unlimited number of “players” – usually male, and even playing fields that extended from one village to the next. This combination resulted in dangerous body contact of all sorts, serious injuries and even death. Eventually a few competition rules for these ancient games may have been agreed to by the competing teams on game day. The playing surface could be composed of varying types of undulating landscapes including streams and vegetation ranging from trees to bare areas. The location was decided by the local host team. The first truly nation-wide rules for many sports were not developed until the 1850 to 1900 period in Great Britain. This resulted in sports within other countries responding similarly.

Proper documentation as to the true origins of most outdoor sports played on grass has been lost in the mists of antiquity. While recognizing this limitation, attempts

MANY OF THE TEAM
SPORTS SURFACES
EVENTUALLY EVOLVED
TO A GRASSY SURFACE
KEPT SHORT BY
GRAZING ANIMALS,
ESPECIALLY SHEEP.

are made herein to suggest a possible time frame for key cultural practices based on scattered bits of historical records. Many of the team sports surfaces eventually evolved to a grassy surface kept short by grazing animals, especially

OTS HIGHLIGHT

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pages 9-11.

sheep. The evenly distributed rainfall and intensive sheep husbandry in Great Britain contributed to this country being a pioneer in the development of turfgrass sports surfaces. These play areas were being “marked off” by the late-1440’s. An early technique for marking the boundaries was via a plow furrow.

During the 1500’s areas of land were being designated and reserved as sites for sports activities.

Initiation of Cultural Inputs.

Rolling became important for bowls and cricket as clubs were formed and a permanent ground acquired. Manuring was avoided or infrequent, especially on larger sports fields so that laborious



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FOR BETTER, SAFER SPORTS TURF. WINTER 2012.

The colour of springtime is in the flowers; the colour of winter is in the imagination. ~Terri Guillemets



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Opinions expressed in articles published in Sports Turf Manager are those of the author and not necessarily those of the STA.

Deadline for Spring 2013 Sports Turf Manager: March 8

WHAT'S ONLINE
www.sportsturfassociation.com

Log-in to the Members Only Section

- Registration Form for STA members for the Sports Turf Managers Association Annual Conference & Exhibition in January
- Call for Nominations and information for the STA Annual General Meeting in February as it becomes available

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President's Desk

BY PAUL GILLEN

As we close out our 25th anniversary year, my thanks to Lee Huether, Cheryl Machan and everyone involved who made this such a special time. It has been wonderful to see old faces and renew so many acquaintances among those people who worked tirelessly to lay the foundation to make this organization what it is today. Our banquet was well attended and enjoyed by everyone. While speeches were kept to a minimum, it was inspiring to hear Annette Anderson and Michael Bladon take us back through our history and see their resolve to make sports turf just as safe and playable as science and economics allow. Now it's up to us to build on this foundation for the next generation.



Paul Gillen addresses guests at the
STA's 25th Anniversary Banquet on October 25.

We have included in this issue Dr. James Beard's article "The History of Sports Field Turfgrass Surfaces", presented at the 2012 Ontario Turfgrass Symposium (OTS). How appropriate is that to bring our anniversary to a fitting conclusion!

Our Field Day was again a tremendous success and the third highlight article "Strategies for Managing Heavily Used Fields" is inside. While we recognize that this topic has been

addressed in previous issues, best cultural practices for safety and playability cannot be stressed enough. Whatever it takes to get this message through to the management and budget people is essential for a safe environment for users of every age and gender – that's our responsibility.

Education is paramount to our ability to produce the best playing surfaces that we can within whatever budget restrictions that we have to deal with. To that end, we recently took the Sports Turf Management and Maintenance Course to Moncton, New Brunswick, drawing participation from that province, Newfoundland and Prince Edward Island. 2013 course dates include April 29 to May 2 at the University of Guelph. Three conferences – that of the Sports Turf Managers Association in January, the OTS in February, and the Western Canada Turfgrass Association in March – provide a wonderful opportunity, not only to get updated on the latest and most cost-effective maintenance information, but to meet and share experiences with others who are facing similar problems. See the Event Calendar for details. I urge you to try to take advantage of at least one of these opportunities – it might be the best investment that you ever made. Just to get things started, we've included in this issue an article by OTS 2013 speaker Beth Rajnovich – "Developing a Long-Term Plan for Sports Fields in Waterloo". I wonder how many of you have this type of strategic thinking in place?

The Annual General Meeting of your association is scheduled for February 20, 2013 during the OTS. Members will have now received the Call for Nominations. Watch your mail or log-in to the "Members Only" section of the website for up-to-date information.

As always, a special welcome to all of our new members. And a reminder that membership invoices will be going out in January. Please watch your mail and remit payment in a timely fashion.

From all of us to each of you, have a safe and happy holiday season.



SEASON'S GREETINGS FROM THE STA

As we approach the end of 2012, on behalf of Lee, Cheryl and the STA Board of Directors, we wish you all Season's Greetings and the very best in 2013.

NEW & RETURNING MEMBERS

Marija Brkic
Downsview Park
Toronto, ON

Dave Boe
Strathcona County, AB

Dave Alexander
City of Edmonton, AB

Mark Goretski
City of Medicine Hat, AB

Ernie Mansueti
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Chad McIntosh
District of Squamish, BC

STA Commemorates



Sports Turf Association executive and members, past and present, together with staff, colleagues, family and friends gathered on October 25 to celebrate the organization's milestone anniversary at a commemorative banquet in Guelph, Ontario.

With historical story boards providing a retrospective of the past, both founding President Michael Bladon and the Ministry of Agriculture, Food and Rural Affairs Annette Anderson (pictured at left) reflected on the association's beginnings, growth and many accomplishments. Bladon challenged the STA executive "To continue our commitment and our mission to provide educational and networking opportunities for our members and the promotion of better, safer sports turf to those involved in sports field management and to the general public".

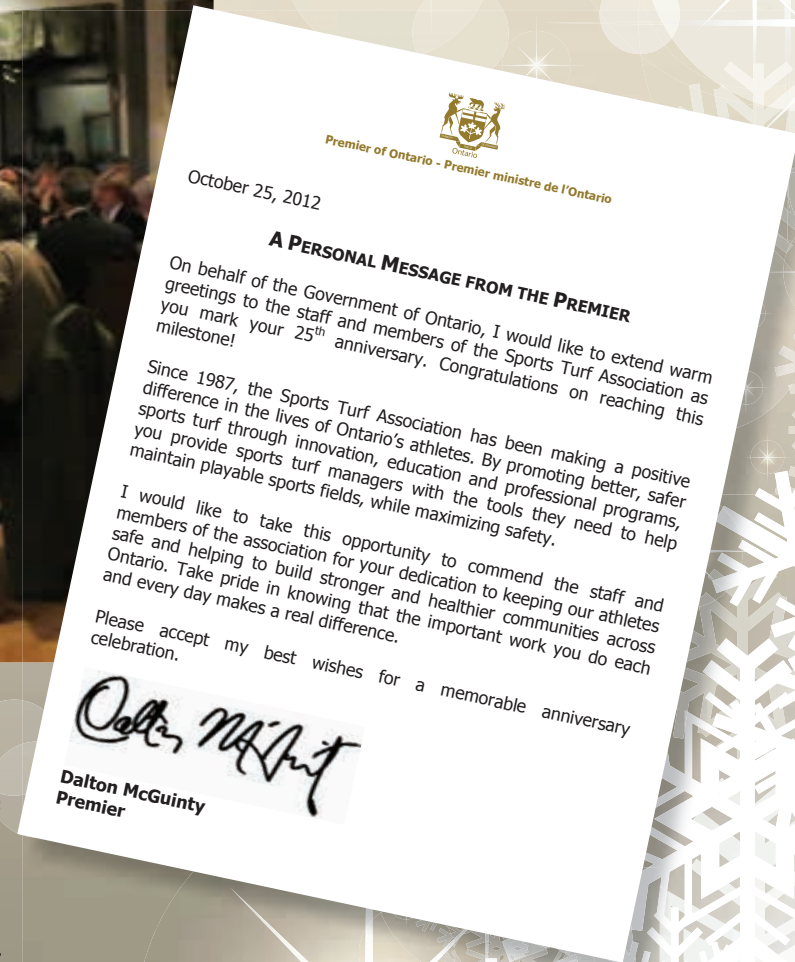
"The STA is an organization of volunteers", added Executive Manager Lee Huether, "from the visionaries of 1987 to the current Board of Directors and everyone in between, the association has grown and benefited from the dedicated service of so many".

Paul Gillen, current President, relayed greetings from Ontario Premier Dalton McGuinty, "Since 1987, the Sports Turf Association has been making a positive difference in the lives of Ontario's athletes providing sports turf managers with the tools they need to help maintain playable sports fields, while maximizing safety... Take pride in knowing that the important work you do each and every day makes a real difference".



Attendees at the Celebratory Banquet included (L-R) Paul Turner/Past President, Gordon Dol/Past President, Paul Gillen/current President, Michael Bladon/founding President, Jane Arnett/Past President and Robert W. Sheard/first Executive Secretary. Bladon, Arnett and Sheard are also Honorary Life Members of the STA.

its 25th Anniversary!



As the year draws to a close so does our reminiscence regarding the establishment, growth and development of the Sports Turf Association over the past quarter-century. And while Henry David Thoreau counsels "Never look back unless you are planning to go that way", we hope that you have enjoyed our retrospective as much as we have enjoyed wading through the old files to bring it to you. But Henry is right and we set our sights on the future. For 25 years the Sports Turf Association has been dedicated to the promotion of better, safer sports turf. That commitment continues. For a look at the retrospective timeline in its entirety, visit www.sportsturfassociation.com.



Event Calendar

ASSOCIATION EVENTS ARE HIGHLIGHTED IN GREEN

December 15

**Early Bird Registration Deadline
Sports Turf Managers Association
Annual Conference & Exhibition**
Details below.

2013

January 8 – 10

Landscape Ontario Congress
Toronto, Ontario
www.locongress.com

January 11

**Early Bird Registration Deadline
Ontario Turfgrass Symposium *Cultivate Your Mind***
Details below.

January 15 – 18

**Sports Turf Managers Association
Annual Conference & Exhibition**
Daytona Beach, FL
www.stma.org, www.sportsturfassociation.com
Note: STA members can register at STMA rates!

January 28 – February 22

University of Guelph Turf Managers' Short Course
Guelph, Ontario www.tmsc.open.uoguelph.ca

February 20 & 21

Ontario Turfgrass Symposium *Cultivate Your Mind* - See page 20
University of Guelph, Guelph, Ontario
www.turfsymposium.ca

February 20

Sports Turf Association Annual General Meeting at OTS 2013
Info: 519-763-9431, www.sportsturfassociation.com

March 3 – 5

**Western Canada Turfgrass Association
50th Annual Conference & Trade Show**
Penticton, British Columbia www.wcta-online.com

Conferencing 2013

The approach of year's end brings with it the approach of the winter conference season. Begin your planning today to attend one of the following educational and networking events.

Early Bird Deadline in December!

The Sports Turf Managers Association (STMA) is headed to Daytona Beach for the **2013 Annual Conference and Exhibition January 15 to 18** at the Ocean Centre Convention Center. Registration and Program Information is available at www.stma.org/2013-conference.

Receive early bird discounts by registering by December 15, 2012. And remember, the Sports Turf Association (STA) is an International Affiliate Organization of the STMA. As such, STA members may register for the US organization's annual conference and exhibition at member rates. To access the STMA/STA member conference registration form log-in to the "Members Only" section of the STA website www.sportsturfassociation.com.

Registration for OTS 2013 is Now Open!

Sports Turf Managers interested in attending the **Ontario Turfgrass Symposium, February 20 and 21** can register now by going to www.TurfSymposium.ca. The website is easy to use and provides both online and printable registration opportunities. Save money by taking advantage of the early bird fee when you register before January 11, 2013 and don't forget to indicate your STA membership on the registration form for the association discount.

Look to the website to provide other important information as it becomes available: continuing education credits, association functions and more. The print brochure for *Cultivate Your Mind*, OTS 2013, which we have excerpted on page 20, is now being distributed. Watch for your copy in the mail!

For further information contact the University of Guelph's Centre for Open Learning and Educational Support at 519.767.5000, info@coles.uoguelph.ca.

Watch for Details!

The 50th Anniversary Western Canada Turfgrass Conference and Trade show will take place March 3 to 5 in sunny Penticton, British Columbia. Event organization is underway. Visit www.wcta-online.com for details as they become available from our Strategic Partners.

History of Sports Field Turfgrass Surfaces

Continued from page 1

OTS HIGHLIGHT
Presented February, 2012
Guelph, Ontario.

Sport	First Played	
	Rules As Now Known	On Turfgrass
Lawn Bowls	c. 1600's	c. 1700's
Cricket	late-1600's	c. 1700's
Horse Racecourse	c. 1700's	c. 1800's
Soccer	1815	1815
Field Hockey	mid-1800's	mid-1800's
Baseball	1845	c. 1870's
Australian Rules Football	1858	1858
Lacrosse	1860	late-1860's
Rugby	1865	1865
Croquet	c. 1860's	c. 1860's
Lawn Tennis	1870	c. 1870's
American Football	c. 1880's	c. 1880's
Polo	c. 1860's	?
Softball	1934	1934

Table 1. Approximate time when team sports were played (a) with rules comparable to those now used and (b) on turfgrass.

wicket surface prior to play was a very early cultural practice. Eventually patches of excessive grass growth not removed by grazing sheep would have been cut by manual scything.

Turfgrass Cultural Practices Evolve.

Team sports ground construction and cultural practices probably did not come into common usage until the 1850 to 1900 period. This coincides with nationalization of rules and extensive organization of sports clubs. Just how many of the groundsmen were employed part-time versus full-time is unclear. Dual use of sports fields was commonly practiced in the formative years from 1850 to 1900, with cricket outfields being used in the winter for soccer, field hockey, and/or even rugby.

Sodding.

One may be surprised that a number of pioneering basic cultural practices originated for use on sports surfaces other than golf courses. Sodding was practiced on bowling greens by at least 1663. However, it was in Scotland that sodding came to the fore in the early-1700's via the use of natural sea-marsh turfgrass. The seaside salt marshes were preferred sod

manual scything would be minimized. This was a reasonable approach in the early days of relatively light usage and low turfgrass quality expectations of those who played on what were usually pasture areas. In-season shoot growth could vary significantly depending on the rainfall pattern, as supplemental irrigation was not available. Removal of excess vegetative growth was by the grazing of rabbits and/or sheep. As animal grazing also results in animal excrement, "sweeping" the bowling green and cricket



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Known Year	Cultural Practice
1660's	Sodding of bowling greens
early-1700's	Rolling of bowling greens
1700's	Sheep grazing of team sports fields
mid-1700's	Rolling of cricket wicket tables
late-1700's	Sand patching of thinned and damaged surfaces
1800's	Systemic method of root zone construction for bowling greens
1870's	Construction of surface contoured sports fields for drainage
1880's	Field surface markings for team sports fields - internal
c. mid-1800's	Manual-push mowing with reel units
late-1800's	Manual graiping/forking
late-1800's	Horse-drawn, single reel mowing
early-1900's	Horse-drawn rolling of sports fields
1912	Horse-drawn, gang-reel mowing
1920's	Light-weight sports field motorized power units
1935	Manual core cultivation
late-1930's	Tractor-drawn spiking and slicing units

Table 2. Chronological stages in the initiation of turfgrass cultural practices on various sports field surfaces. Year listed is when written documentation is available, but may have been utilized earlier.

harvesting sites as they were dominated by salt-tolerant bentgrass with a minimum weed content, plus fine-textured silt soils that facilitated ease of turfgrass cutting, lifting, and trimming.

For centuries turfgrass sods were manually harvested using a long-handled “turving iron” and “gauge box” plus “sheering knife” for underside soil trimming. Then a sled-like harvesting device was developed in the early-1900's that was attached to a set of long handles with a crossbar for kicking the fixed sod blade forward via a foot action. Larger horse-drawn sled cutters eventually evolved. It was not until 1944 that a motor-powered, mechanical sod cutter was invented.

Rolling.

A second pioneering turfgrass cultural practice first used on bowling greens in Great Britain was rolling. It was being practiced by at least 1700 using heavy, carved stones. Rolling of cricket wickets followed by at least the mid-1700's, and was widely practiced in the early-1800's.

The rollers used evolved from carved stone to solid elm wood, to cast iron, to metal water ballast types. These rollers were manually pushed until the 1920's when motor-powered tractors became available to pull gang units.

Patching.

What evolved to the practice of topdressing an entire green or cricket wicket probably originated as what was termed “sand patching”. When this practice was introduced lacks documentation. However, the need for smooth bowling greens probably led to patching by at least the late-1700's when rolling

use expanded. When organic materials were used in patching bare areas, they also were beneficial in stimulating turfgrass recovery as this was the only external source of key nutrients.

Early topdressing was applied by slinging in an arc with a flat-mouth shovel. Eventually a manual-push, side-wheel mechanical topdresser was developed in the early-1900's. The practice of topdressing declined during and after World War II. Its use did not increase until the development of the motor-powered, mechanical topdresser in the 1960's.

Manuring.

The early nutrient application practices used animal manure. Aging in piles allowed particle fractionation that facilitated more uniform applications. This approach eventually evolved to what is now known as composting in the 1800's. The source of organic material for composting ranged from animal manures/scraps, as from abattoirs, to plant materials such as leaves and seed by-products. Layering of various organic

sources with sandy soil in piles became a common procedure, followed by periodic mechanical turning.

Use of manures declined in the 1920's, due to expansion of motor-powered vehicles and a resultant major reduction in the horse population, especially in urban areas. Consequently “artificial manures” or fertilizers came into common usage. The primary composition of these early fertilizers was from mineral sources.

Grazing/Mowing.

Animals were the original biological mowers for sports played on grassy surfaces. Primitive turfgrass bowling greens were probably located on sites grazed by “cunnigers” or rabbits. The same probably occurred for cricket wickets. Early cricket outfields and soccer fields were biologically mowed with sheep.

An undulating, grazed pasture would have patches of excessive vegetative growth. As the desire for improved playing surfaces emerged, these patches would probably have been cut manually with a scythe. Just when this evolved is unclear.

The first manual-push mower was invented in 1830. Bowling greens were probably the first to be uniformly cut with a mechanical mower, since ball roll is a very basic aspect of the game. Just when or if push, reel mowers were used on other types of sports turfgrass surfaces is unclear. The horse-drawn, reel mower was invented in 1843. It was in use on some sports fields by the late-1800's. The multi-gang, horse-drawn, reel mower was invented in 1912, and was converted to a tractor-drawn variation in the 1920's. Development of the multi-gang, reel mower was a major advance in the maintenance of turfgrass sports fields.

Graiping.

As the intensity of play on turfgrass sports surfaces increased problems with soil compaction became a concern in sustaining a turfgrass cover. Impaired internal soil drainage of water and eventual turfgrass thinning were warning symptoms. Physical disturbance of the soil by manual “graiping” or forking came into use by the late-1800’s. This was a laborious, time-consuming practice on compacted clay soils, especially if dry. This procedure was used on a 4 – 6 inch (10 – 15 cm) spacing for areas as large as one acre (0.4 ha) or more.

Early turfgrass cultivation by graiping involved a fork with 4 – 5 fixed, solid, flat, metal tines mounted on a wooden handle. It was physically forced into the soil primarily by the downward pressure of the human foot. Soil openings were accomplished via horizontal displacement. A significant advance in 1935 was a manual coring device. The advantage was the physical removal of a vertical soil core. It involved 3 – 4 fixed, hollow, metal tines mounted on a wooden handle. As with forking, it was physically forced into the soil by the downward pressure of a human foot. The soil core was pushed upward out of the hollow tine and dropped onto the turfgrass surface. An effective powered, mechanical coring machine was not invented until the 1950’s.

Systematic Root Zone Construction.

During the 1800’s the first known widely-adopted systematic method for construction of root zones evolved in Scotland for bowling greens. The “Scotch Greens” were flat in contrast to the

crowns of northern England, and thus internal drainage of excess water was desired to minimize cancellation of play days. This indicated a need for construction on sand sites. However, many bowling greens sited in villages and estates around Scotland were on poorly-drained native soils.

The solution developed in Scotland was construction of a root zone thought to have improved internal drainage of water. This method consisted in variations of the following “soil-less” profile: digging a flat subbase, placement of clay pipe drains at a 9 – 21 foot (2.8 – 6.4 m) spacing, spreading a 6 – 12 inch (15 – 30 cm) deep layer of coarse clinker, broken stone or brick-bats, adding a 1 – 3 inch (2.5 – 7.6 cm) thick layer of fine ash, and topped with 1 – 3 inches (2.5 – 7.6 cm) of sand upon which the sea-marsh turfgrass was laid. This method eventually

was widely used in bowling green construction throughout Great Britain.

Closing.

The evolutionary history of turfgrass cultural practices spans almost two centuries. The major developments up to the 1950’s are addressed herein. Most of the changes have been in response to increased intensity of use, quality demands, and safety concerns. •

THE EVOLUTIONARY HISTORY OF TURFGRASS CULTURAL PRACTICES SPANS ALMOST TWO CENTURIES.

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FIELD DAY HIGHLIGHT

Presented September, 2012
Vaughan, Ontario.

Strategies for Managing Heavily-Used Fields

Tom Serensits, The Pennsylvania State University

Managing a heavily-used athletic field can be a daunting task. While you may do your best to limit the number of events, the reality is that many times your field will host more activities than it can handle under your normal maintenance practices. As athletic field managers, we must remember that fields are meant to be played on and we need to do everything in our power to provide the best possible field conditions regardless of intensity of use. Here are some keys to successful management of heavily-used fields.

1. Mowing. It sounds simple enough and it is something that we all do on a regular basis. Because it is such a routine practice, sometimes it is a good idea to take a step back and really think about your mowing practices and how they can be improved.

How often do you mow? Most professional facilities are mowed a minimum of three times per week during the growing season. Sure, they may be mowing at lower mowing heights than most field managers do and those lower heights require mowing more often. But in general, more frequent mowing leads to increased density and uniformity. If you are currently mowing once per week, try to

mow twice per week. If you are mowing twice per week, bump it up to three times per week and see if conditions improve. More frequent mowing means that you are removing less of the grass blade each time,

A CLEAN CUT IS IMPORTANT IN THE OVERALL HEALTH OF THE TURF PLANT.

which is a good thing because you never want to remove more than one third of the grass blade during a single mowing. And, since you will be mowing more often, it is important to routinely sharpen the mower blades. A clean cut is important in the overall health of the turf plant.

It is also important to mow at the proper height for your situation. Professional fields consisting of Kentucky bluegrass (*Poa pratensis*) and/or perennial ryegrass (*Lolium perenne*) are often mowed between 1 and 1.25 inches. Unless it is a high maintenance situation, recreational fields should not be mowed that low. Mowing

heights of 2–3 inches typically work best on these types of fields. Lower mowing heights can lead to increased density but also result in less wear resistance and shallower rooting. Setting the mower higher than three inches will promote deeper rooting, but may also negatively affect the playability of the field—especially in a sport like soccer.

2. Fertilization. A good fertilization plan is the backbone to successful field management. Without enough nutrients—especially nitrogen—the turf cannot recover from the wear and tear of constant use. When putting together a nutrient management plan, the first step is to have a nutrient analysis performed on your soil. The results of that test will give you a starting point for your plan. It is recommended that you have your soil tested once per year at the same time each year. On unirrigated fields, we typically see the best results when we apply a minimum of 4 lbs of nitrogen per 1000 ft² each year. The amount of nitrogen can be increased to 5–7 lbs of nitrogen per 1000 ft² on irrigated fields.

You can get the most out of your fertilizer application when you apply it at

the proper time of the year. For example, fertilizing in the spring and fall is much more effective than fertilizing during the summer months. Applying a fertilizer to drought and heat stressed turf is never a good idea. If you have an irrigation system, you have a little more flexibility with summer fertilization. But, you still want to apply the majority of your fertilizer in the spring and especially in the fall.

3. Overseeding. On a field that is heavily used, you will lose turf cover. That is just the nature of the beast. As a result, it is important to have seed in the ground to take the place of turf plants that are worn away. How often should you seed? As often as you can. In most cases, a rotary spreader works best. Start seeding after the first game and continue to seed before and after each game. Seed that is spread before the game will be worked into the soil by players' cleats. You will build up a "seed bank" that will continually replace ripped-out plants with new seedlings. The more seed you put down, the more turf cover you will have. Best results occur when at least 30 lbs of seed /1000 ft² per year is applied.

It is also important to seed with the correct species. From both an agronomic and economic perspective, perennial ryegrass is the best choice for in-season overseeding because it germinates and matures quickly. Kentucky bluegrass should only be overseeded when there is sufficient time for the plants to mature

(several months without field use). Under most circumstances, high-use fields should be seeded with perennial ryegrass. Information on the performance of many perennial ryegrass varieties (along with other species) can be found on the National Turfgrass Evaluation Program's website (ntep.org).

Another trick to overseeding is to not treat the entire field the same way. If the outside portions of your field do not receive much wear and have good turf coverage, focus your efforts on the high wear areas like down the center of the field and goal mouths. There is no rule that you need to spread your seed evenly across the entire field.

Finally, include some seed in your divot mix. After each game, fill in divots with a mix of sand, organic fertilizer, and perennial ryegrass seed. An easy way to make divot mix is to cut a 55-gallon drum in half and pour in sand, some organic fertilizer, seed, and enough water to wet the sand. Then, give it a good mix with a shovel and continue mixing once per day. This will start the seed germination process so when you fill the divots, it won't take as long for the seed to germinate. New divot mix will need to be mixed each week because if the seed germinates in the drum, it is no longer viable for field use.

4. Aerification. Routine core aerification is another important step in maintaining high-use fields. One of the biggest enemies on

heavily-used fields, is soil compaction. Soil compaction increases surface hardness, reduces pore space, limits root growth, and slows water infiltration. Aerifying several times per year will help combat these problems, making your field safer and healthier.

The most effective and beneficial method is hollow-tine aerification. Select tines that remove the largest size cores (3/4-inch is typical) and set the spacing on the machine as close as possible. Large tines combined with close spacing will give you the best results. While hollow-tine aerification is best, it also causes the most amount of surface disruption and your field will need time to recover before it can be played on again. If your maintenance time-window is short, use solid tines. Solid tines do not remove soil cores so compaction is unaffected, but using solid tines does increase oxygen levels and water infiltration. You can also use a deep-tine aerator, which penetrates to depths of up to 16 inches and fractures the soil below the surface, increasing soil oxygen. Other methods of aerification include verticutting, slicing, spiking, and water injection. Aerifying when it is too dry will limit tine penetration into the soil and if it is too wet, the sides of the aerification hole can glaze-over and seal-up. So, it is best to avoid extremely wet and dry conditions. Deep-tine aeration is an exception. The soil should be dry so that the soil fractures easily.



Figure 1. Regular overseeding will result in more turf cover and less weed invasion such as the knotweed found in the center of this field.

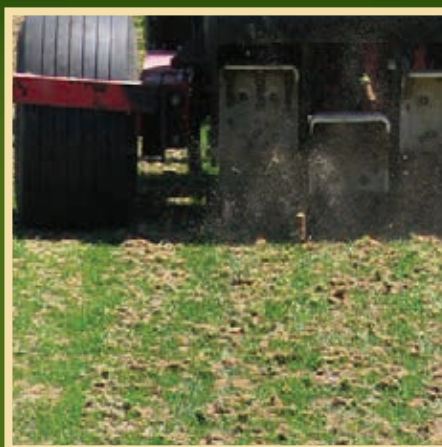


Figure 2. Aerification is a key component of managing high traffic fields



Figure 3. Intense wear often occurs down the center of fields. Apply the majority of your seed in these locations.

We often get asked the question of what to do with the cores after aerification. After you hollow-tine aerate, cores should be dragged back into the soil using a drag mat. Going over the field with a rotary mower also breaks up the cores (remember to sharpen your blades after you do this). If you plan to topdress with sand, the cores must be removed prior to topdressing instead of being dragged back into the field. If you are managing a sand-based rootzone, you should always remove the cores instead of dragging them back in.

Another technique to improve field conditions is to incorporate a good, quality compost into your soil. Spreading 1/4-inch of quality compost onto the field before you aerate and then incorporating it into the soil through aeration is an inexpensive way to improve your field. Compost increases nutrient retention and microbial activity along with improving soil structure.

Yearly compost applications will improve your field's turf density and color, increase root growth, and reduce the need for fertilizer and irrigation.

Additional information about using compost can be found at <http://plantscience.psu.edu/research/centers/turf/extension/factsheets/composts>. Do not use compost on sand-based rootzones.

Finally, after you drag in the cores or topdress, it is a great time to fertilize and seed. Then, if you have irrigation, give the field a good, long soaking. If you don't have irrigation, try to time this process before rain is expected.

5. Other Strategies. While the preceding four keys describe how to improve your field from turf and soil management aspects, there are some other techniques that can help you deal with heavy use of fields. If possible, try to rotate or slide your fields to spread out the wear on the most heavily used areas like goal mouths. By doing this, you can use the techniques we already described to revive your trouble areas. Designating practice areas off the field of play for repetitive practice drills can also help. Also, growth blankets can provide a jump start on recovery in late fall or early spring. Again, you don't need to put growth blankets over the entire field, just focus on those heavily-used areas. Finally if you manage a complex with multiple fields, select one field to be your "showcase" field. Pay a little more attention to this field and try to limit use on it. Then when teams play on it, it will be a special event for them and you can use it as an example of what you can do if play was limited on other fields and you were provided with the manpower, equipment, and budget required for those field conditions.

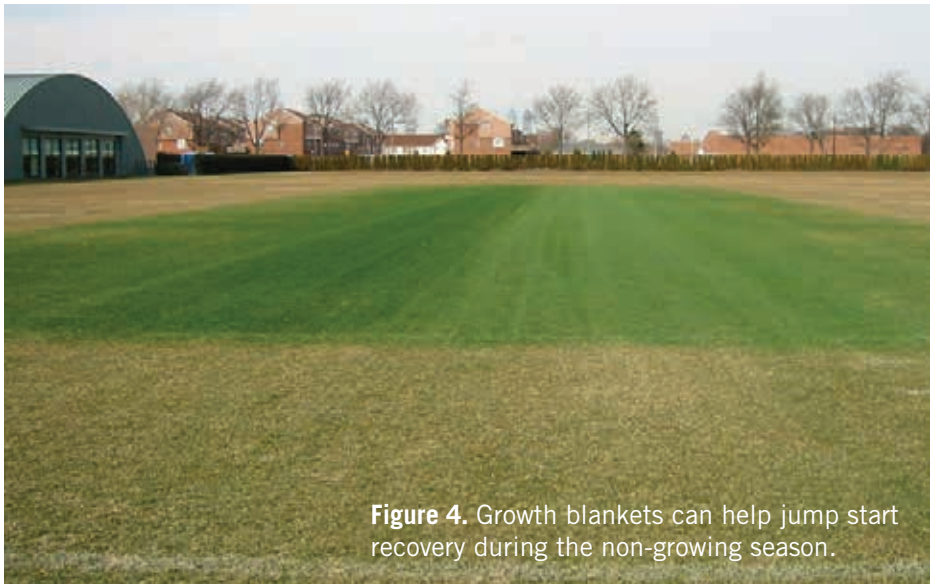


Figure 4. Growth blankets can help jump start recovery during the non-growing season.

Managing a heavily-used field is not easy. However, by improving your mowing, fertilization, aerification, and overseeding practices, you can overcome many of the challenges brought about by field over-use. So, when it seems like your field is being used all day, every day, don't throw your arms up and walk away. Take on the challenge and make your field the best it can be. •

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Waterloo is bursting with active, healthy people who make good use of the City's existing recreational facilities.

The City of Waterloo's new Outdoor Sports Field Strategy is a long-term plan that will help ensure residents have access to quality fields on an ongoing basis and will also help city staff balance today's needs with changing demands over the next 20 years.

The strategy paints a picture of an ideal future and a path moving forward. The goal of the strategy, when implemented, is for Waterloo to become a community where everyone who wants to play field sports can do so, regardless of their sport of choice, their age, their ability, or their gender. The City will be a recognized leader in outdoor sports field development, management, maintenance and programming. Waterloo will be seen as one of the best communities in which to play, compete, coach, officiate or be a spectator of outdoor field sports. The City of Waterloo developed this ambitious strategy in response to a number of community needs and pressures.

Development of this Outdoor Sports Field Strategy involved best practice

research, data analysis and collaboration between staff from the Public Works Department and the Community, Culture and Recreation Services Department. It also involved a public engagement process that included an online survey, public open houses and stakeholder meetings.

WATERLOO IS BURSTING WITH ACTIVE, HEALTHY PEOPLE WHO MAKE GOOD USE OF THE CITY'S EXISTING RECREATIONAL FACILITIES.

What emerged through the strategy development process was the following vision statement:

"The residents of Waterloo have equitable access to quality outdoor sports

fields throughout the City, thereby fostering improved individual and community health and increased capacity for sport and play."

It is hoped that this vision statement will provide direction not only to city staff but also to the sport organizations that use the fields and to the community at large. Seven strategic goals have been identified to form the core of the overall strategy. These goals speak to areas of greatest need where high impact changes can be made within available resources. They have been placed in order of priority based on public input.

Goal 1: To improve the safety and long-term quality of outdoor sports fields.

Goal 2: To maximize use and expand the amount of programmable time at existing fields to maximize the use of these fields prior to new development.

Goal 3: To develop new outdoor sports fields, within available resources while recognizing competing pressures, based on population growth and field need projections.

Goal 4: To enable participation in physical fitness activities in Waterloo through improved outdoor sports field access for neighbourhood, recreation,



Developing a Long Term Plan for Sports Fields in Waterloo

Beth Rajnovich, MA, Coordinator/Analyst
Culture Plan, City of Waterloo

and competitive use for the full range of outdoor sports of public interest in Waterloo.

Goal 5: To increase capacity throughout the sport and recreation services system in Waterloo to allow for continuous improvement in field maintenance, allocation, and management.

Goal 6: To pursue, facilitate and encourage innovative partnerships for the provision of access to outdoor sports fields.

Goal 7: To invest in enhanced communication, relationship building and collaboration between city staff and outdoor sport organizations.

As part of the general movement to make cities more livable, municipalities face public pressure to deliver increasingly sophisticated, higher quality sports fields. There are also an increasing number of community groups wanting access to recreation facilities for a broader range of activities than in the past. Opportunities

for informal, recreational and competitive sport are desired by local residents.

Meeting the demand for outdoor sports fields today and in the future is important because these fields contribute to opportunities for an active lifestyle. They also contribute to the social, cultural and economic vitality of the City. Sports fields make cities great places to live, thereby attracting employers to the area, who in turn attract and retain high quality talent. Additionally, sports fields can increase tourism to the City, as teams and their families come to the City to compete, contributing to our local economy by staying in local hotels, eating in local restaurants, shopping at local retailers and visiting other local cultural sites and attractions.

Land for development is scarce in the City of Waterloo. All remaining green field land within city boundaries has been allocated for development. There is also

high demand for other lands available for redevelopment. While it was anticipated that additional sports fields would be needed to support population growth, a strategy that demonstrated through data that additional sports fields were needed in the future, and predicted when those fields would be needed, would not only help with long term planning, but would also support planning for acquisition of land to enable construction of additional sports fields.

In addition to land constraints, like many municipalities Waterloo is facing financial constraints. The City has identified the importance of focusing on maximizing the use of existing facilities prior to constructing any new facilities. A significant part of the strategy work analyzed the existing fields to determine if they were being well used and to determine where and how that use could be improved.

Central to the development of the strategy was understanding the City's current assets. A comprehensive inventory of the existing sports fields in Waterloo was established. This involved looking at all of the multi-purpose fields, diamonds and cricket pitches in the City that sport groups can book through the City's central booking system.

For 2011, the City of Waterloo offered access to 92 facilities across the City. There are 44 diamonds that can accommodate baseball, softball, slow-pitch, fastball and t-ball, and two pitches for cricket. The remaining 46 fields are rectangular, multi-purpose fields for sports such as soccer, football, rugby, field lacrosse, field hockey and ultimate frisbee.

The majority of the highest quality facilities are located on the east side, with some in the central part of the City. There are no facilities on the west side, an area that has seen significant growth and expansion of residential communities in recent years. This lack of higher quality facilities on the west side of the City indicates a geographic disparity in field distribution and points to an opportunity for new, high quality, field development to allow residents access to facilities closer to home.

Table 1. All fields by type and ownership, estimated 2011 inventory

	Number	City Owned	School	Leased
Rectangular	46	29	13	4
Diamonds	44	23	21	0
Cricket	2	1	0	1
TOTALS	92	53	34	5

Table 2. All fields by type, characteristics and amenities, estimated 2011 inventory

	Artificial Turf	Lights	Irrigation	Parking	Washrooms
Rectangular	2	9	9	39	23
Diamonds	0	8	5	37	18
Cricket	0	0	0	2	0
TOTALS	2	17	14	78	41

Table 3. Rectangular multi-purpose sports fields – bookings in 2009/2010

Maximum Weekly Capacity	Number of Fields	Total Hours Used (Average of 09/10 Bookings)	Maximum Use Capacity Per Season (All Fields)	% Use of 100% (Max) Capacity	% Use of 80% (Goal) Capacity
High (26 hours)	4	1,698.0 hrs	1,768 hrs	96.0%	120.05%
Medium (18 hours)	28	6,702.0 hrs	8,568 hrs	78.2%	97.78%
Low (10 hours)	7	862.9 hrs	1,190 hrs	72.5%	90.64%

Note: The length of a season for these fields was estimated at 17 weeks (May to August). This is an average season length.



New artificial turf fields at RIM Park with public art in the foreground



Land on Westmount Road where the City of Waterloo is currently in the process of developing three new fields. It is anticipated they will be available for use in 2016.

The inventory also examined ownership of fields booked through the City.

Of all the outdoor sports fields in the City of Waterloo’s inventory, 58% are on city land, 37% are on school lands and the remaining 5% are on leased lands. The inventory also included details about the fields such as surface type and whether or not they had irrigation or lights, as well as associated amenities such as washrooms and parking.

Amenities vary greatly from field to field. Two of the City’s multi-purpose rectangular fields have artificial turf. Only 18% of all fields have lights. There is in-ground irrigation at nine fields. Washrooms are available at 45% of fields and parking is available at 85% of fields. Local residents indicated that washrooms are the most important amenity to have at sports fields, followed in priority order by off-street parking, player seating, lights, shaded areas and spectator seating. These features improve player and spectator comfort, whereas turf type, lights and irrigation increase the amount of time the field can be used.

Maximizing utilization of existing fields is a priority of the strategy. To understand how field use can be improved, it is necessary to look at how the fields are currently being used.

To do this, planning staff drew from the Sports Turf Association’s classification system, the expertise of city staff responsible for field maintenance, and booking data. Based on this information a maximum field usage capacity was

assigned to each field in the City. The assigned maximum capacity is based on current field conditions and assumes that existing maintenance practices continue. Maximum field use capacity can be defined as the maximum hours of use allowed per week before turf quality begins to decline in a significant way. However, achieving 100% of the maximum capacity for each

THERE ARE PLANS TO REDEVELOP LAND CURRENTLY OCCUPIED BY SPORTS FIELDS IN TWO LOCAL PARKS.

field is not a realistic or appropriate goal. While it is desirable and cost effective to use the fields as much as possible, the complexities of field use scheduling need to be considered. Time is needed for breaks between games, for weather related cancellations and to allow for unexpected field maintenance. Since this is also the first time staff has assigned use capacities to each field, staff suggest 80% of the maximum use as a reasonable target.

By assigning a goal use (80% of maximum capacity) to each field and comparing actual use in 2009 and 2010 to that benchmark, it was possible to get a sense of which fields were being efficiently used and which could accommodate more use.

Data analysis suggests that low capacity fields are under-utilized, medium capacity fields are used appropriately and high capacity fields are over-utilized. Based on the goal use, usage results indicate 90.64%, 97.78%, and 120.05% respectively.

Diamonds were classified into two categories: high capacity (those with lights) and medium capacity (those without lights). High capacity diamonds are close to goal use capacity at 98.91%. On the other hand, medium capacity diamonds are used only 67.98%, suggesting they could be used more. The two cricket pitches in Waterloo were both ranked medium capacity and are used at 96.98% of goal use, suggesting there is little additional capacity for more use.

This analysis indicated not only which fields were well used and which were not, but also provided a starting point for discussion with local sport groups about why they used some fields and not others and what changes they might make to their scheduling practices to better use the existing fields.

Based on this analysis, staff also identified opportunities for policy and operational changes that would enable increased use of the fields. These include development of space allocation procedures to improve equity in access to fields and identifying or creating opportunities to use fields for alternate or multiple sports. The analysis also confirmed the importance of leased and school fields to meet community needs. Negotiating longer term leases for leased facilities and exploring the

development of shared use agreements with school boards will also contribute to better use of available fields and potentially delay the need for new fields.

While there is much that can be done to improve the use of the current field inventory to meet the needs of sports organizations in Waterloo today, consideration must also be given to future needs.

To project future field need, field demand projections (based on current booking trends and projected population growth in the City) were developed and then compared to the capacity of the anticipated field inventory at five year intervals between 2011 and 2031. There were several key factors involved in developing the projections. First, the projections were based on the assumption that usage of all of the existing fields could be improved before building any additional fields. It also assumed that maintenance standards would remain the same in the future as they are today. However, additional resources (human and financial) to improve maintenance may add new capacity to the field inventory. The projection also takes into account the removal of fields from the current inventory. For example, there are plans to redevelop land currently occupied by sports fields in two local parks. The loss of these fields had to be taken into account

in the projections. Finally, the projection methodology assumed that the demand for sports fields would grow at the same rate as the population.

Comparing projected demand to the anticipated field inventory capacity at five year intervals between 2011 and 2031 revealed when additional fields will be needed and the type of fields required. Based on this analysis, recommendations have been made on how many additional facilities of each type are needed over the next 20 years.

Even after meeting the target of using the fields to 80% capacity, results show there will be a need for additional multi-purpose rectangular fields over the next 20 years. By 2031, more artificial turf fields, 3 – 4 more high capacity rectangular fields and nine more medium capacity rectangular fields will be needed across the City.

The projections suggest that between 2011 and 2031 there will be a need for four more high capacity diamonds, although this need can largely be attributed to loss of diamonds within city parks to redevelopment. There will also be a need for another 1 – 2 cricket pitches within the City to accommodate redevelopment of one of the two existing cricket pitches and projected population growth.

The strategy identifies not only a need for additional fields, but also a need

to consider how the quality of existing fields can be maintained over the long term. Strategies identified include a long term plan for upgrades and renovations to existing fields in the inventory to improve facility quality, as well as development of a long term capital investment plan for infrastructure such as benches, backstops and goal posts. There will also be opportunities to change operating budgets and maintenance practices to improve turf quality and to better align with user expectations and industry best practices.

These are some of the highlights of the City of Waterloo's Outdoor Sports Field Strategy. Development of the strategy is just the first step. The upcoming implementation process will lead to improvements and take the City of Waterloo on its path towards the envisioned future.

The Outdoor Sports Field Strategy document can be found in its entirety at www.waterloo.ca/outdoorsport. Questions about the strategy and the planning process and methodology can be directed to beth.rajnovich@waterloo.ca.

Editor's Note: Beth Rajnovich will be speaking at the Ontario Turfgrass Symposium, Thursday, February 21, 2013. For complete details visit www.turfsymposium.ca.



Ontario Soccer Association Board of Directors Approves Mandated Changes for U12 & Below in 2014

The Ontario Soccer Association (OSA) Board of Directors met on the weekend of September 14 to 16, 2012 and strongly endorsed the ongoing phased-in implementation of Long-Term Player Development across the Province. In particular, the OSA Board formally approved the LTPD Recreation and Development Matrices for the 2014 season.

Highlights of the mandatory implementation for the 2014 season include the following:

- No promotion and relegation from U12 and below

- No league tables from U12 and below
- Small-sided games with fewer players on the field (5v5 at U7 and U8, 7v7 at U9 and U10 and 9v9 at U11 and U12)

Ranges for field width and length have been provided at each development stage, together with goal sizes, in the Recreation Matrix.

Visit www.sportsturfassociation.com for a link to the entire news release and the Recreation Matrix.

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Sports Turf & ORFA Specific Sessions

WEDNESDAY, FEBRUARY 20

W6. 1:30pm - 2:00pm

Practical uses of Normalized Difference Vegetation Index (NDVI) for the Sports Turf Manager – Dr. Ken Carey, University of Guelph

W7. 2:00pm – 2:30pm

Turfgrass Water Conservation Alliance and its qualified turfgrass products
– Russ Nicholson, Pennington Seed

W8. 2:30pm - 3:30pm

Winter stress is not just a turf problem – Gord Horsman, City of Moncton

THURSDAY, FEBRUARY 21

T1. 9:00am - 10:00am

Research and real world applications using crumb rubber to improve natural turf sports fields – Dr. Tim Vanini, New Dimensions Turf

T2. 10:00am - 10:30am

Overseeding species: Best choices for success
– Katie Dodson, University of Guelph

T3. 11:00am - 11:30am

Impact of various field playing surfaces on sports injury rates
– Dr. Eric Lyons, University of Guelph; Dr. William Gage, York University

T4. 11:30am - Noon

Outdoor sports field strategy utilizing STA classification system and benchmarking
– Beth Rajnovich, City of Waterloo

The Ontario Turfgrass Symposium is a premier education symposium developed exclusively for the turfgrass industry. Speakers from both industry and academia will provide valuable insight reflecting on the OTS 2013 theme: Cultivate Your Mind. Delegates will participate in sessions providing up-to-date information responding to the complexities of maintaining healthy turf in today's more restrictive growing environment.

General Sessions

THURSDAY, FEBRUARY 21

T19. Drought dialogue: How can we, as Turf Managers, provide more drought tolerant turf surfaces for the future?

This is a joint session with the Nursery Sod Growers Association.

T20. Incidents and accidents record keeping: The do's and don'ts
– Terry Piche, ORFA

T21 Turf in the lab

Dr. Ken Carey and Linda Jewell, University of Guelph, Shahram Sharififar, Natural Insect Control

YEAR'S END IS NEITHER AN END NOR A BEGINNING BUT A GOING ON, WITH ALL THE WISDOM THAT EXPERIENCE CAN INSTILL IN US.
~ HAL BORLAND



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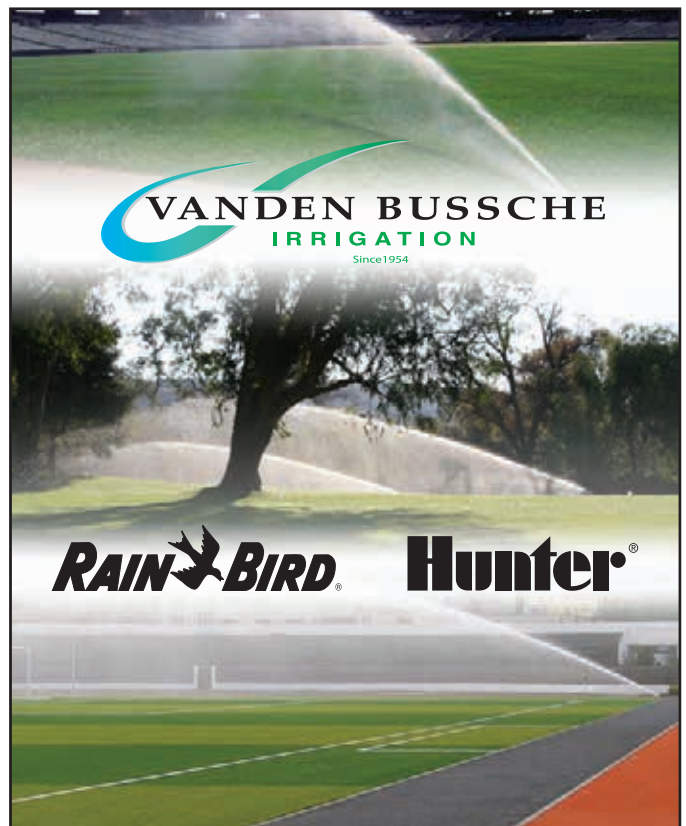
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Synthetic Turf Fields: How Do I Choose?

Ben Tymchyshyn, BLA, MBCSLA, OALA, CSLA,
Landscape Architect, MMM Group Limited

Photos: MMM Group Limited

Synthetic or artificial turf was first developed in the 1960's and was introduced in Canada at the Nepean Sports Complex in Ottawa, Ontario in 1984. It is by anyone's standards relatively new and technical requirements specifically for field accreditation are far more stringent than the first application at the Houston Astrodome. Within this article we are going to discuss understanding synthetic turf needs which includes programming, design requirements as well as how to mitigate risk, issues and problems prior to construction and finally, a general overview regarding costs of synthetic turf fields.

Understanding the Unique Needs

Based on the experience of our firm over the past several years, the selection between high performance synthetic turf and community use synthetic turf fields can be a difficult choice for the client as the costs for many of the fields can range from \$1.2 million to \$2.0 million. Site selection is a major factor in determining the type of sports field you wish to use. The

PROGRAMMING OF THE ATHLETIC FIELD IS CRITICAL TO ENSURE THAT YOUR FACILITY RECEIVES THE BEST FIT POSSIBLE FOR ALL USERS AND THE COMMUNITY AS A WHOLE.

following is a list of factors you may need to be aware of when placing your sports field: existing field being replaced, building on new (green site), re-development of a brownfield, landfill and engineered fill site.

Programming of the athletic field is critical to ensure that your facility receives the best fit possible for all users and the community as a whole. A stakeholder consultation is critical to determining the needs of the facility prior to any design development taking place.

Before selecting a synthetic turf field, there are a number of decisions that must be made. These assumptions require a matrix:

- Does your maintenance team have the skill set for a synthetic turf field?
- Does the field fit into the overall development plans or master plans for athletic fields within the system?
- What can you afford?
- What are the programming needs for these proposed athletic fields?
- Is the site selected correct for this development?

Many questions need to be asked by the consultant team prior to design. Some of the questions that may be asked are:

- What sports are going to be played on the synthetic field?
 - Rugby
 - Soccer
 - Football (touch or tackle)
 - Ultimate frisbee
 - Field lacrosse
 - Cricket
 - Field hockey

- What do air support structures need to enclose?
 - Field only
- What type of international standards does the athletic field facility want to meet?
- What are the basic requirements for the field house building?
 - Change rooms
 - Showers
 - Rest areas
 - Concessions

Many municipalities, institutions and private organizations are now constructing synthetic turf fields. Synthetic turf fields can be used on a regular basis by sport organizations without the fear of wear and damage as well as prolonging seasonal sports by approximately 2 – 3 months if the field is lit.

The unique design needs for community or high performance synthetic turf are as follows:

- Design of the overall plan requires the separation of spectators from the field area.
- Design of a fence to enclose and protect the field from any vandalism.
- Design of the concrete curb around the field is crucial to ensure that there are no issues with securing the synthetic turf to the required edging.
- Design of the synthetic turf field must have a free flowing granular base to allow for water movement away from surface and to prevent flooding at field level.
- Ensure that there is positive drainage on the field so that water can move through freely into a storm water sewer system or drainage outlet.
- Proper selection of the synthetic turf product is critical to ensure that the proper product has been chosen for the specified sports that will be played on the field; the product selected can be either slit film or a mono-filament synthetic turf or dual fibre construction.
- Proper signage is critical for synthetic field projects to ensure no damage is done during use.
- Design of the sports field lighting system is critical so that minimum lighting levels are met for high recreational play as well as ensuring that light spill from the system is kept to an absolute minimum.

More Questions Arise:

- Do you require FIFA accreditation or accreditation from another international organization?
- Does the consultant have experience with and understanding of synthetic turf?
- Is a geotechnical investigation of the site a requirement?
- Do you require an e-layer (shock pad under the turf layer)?
- Base design for synthetic turf is similar to road base construction, but the one exception is it must be clear of free draining stone.
- What is a geo-membrane and what is it used for? Geomembranes are a kind of geosynthetic material made up of impermeable membranes. Their uses include solid waste containment (such as landfill liners), mining, and water containment applications.

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How to Mitigate Risks, Issues, and Problems

Many of the risks and problems associated with synthetic turf fields are based on the following:

- One major item that must be addressed is utilizing qualified contractors to complete the work:
 - Select a general contractor with several years of successful project completion and experience
 - If you must tender the project, consider either invited bid only, or pre-qualify the contractors to bid on the project
 - Select only contractors with proven experience and the right equipment for the job
- Lack of site information that fully covers the entire sports field.
 - Solution – Geotechnical investigation report that grids the field with minimum of 12 boreholes per field.
- Improper base design (granular base) for the synthetic turf field.
 - Each synthetic field site is unique and cannot be designed using typical details. Understanding soil science and how soil drainage and infiltration of water into the sub soil is critical for proper base design.
- Lack of sub-surface drainage for the current site.
 - Solution – Ensure that the sub-granular base for the synthetic turf field has a positive outflow to a storm sewer system, bio swale or tank and pump system.

- Field will be contained within a 120 x 75 square metre area
 - 200 mm granular base with geomembrane layers with drainage system typically multi-flow on 5 metre spacing
 - Native sub-grade with no settlement issues
- There are currently numerous designs for granular bases for synthetic turf systems and the pricing of those systems can vary greatly from consultant to consultant.

One key point is that before you spend \$1,000,000+ on a new athletic field complex make sure that you have an internal team and consultant team that will lead your project from start to finish.

In conclusion:

- It is important to educate yourself to ensure you purchase a quality surface in the first place because you cannot change it after the fact.
- Today’s synthetic turf surfaces are more like sports equipment in that they are not all created equal, although they may look similar from the surface. There are distinct safety and performance characteristics of each type of synthetic turf that needs to be engineered into a professional quality surface.
- Not all surfaces are designed and engineered with the same level of care, and you will require testing, not marketing, to determine which surfaces are high performers and which ones will not perform as promised.
- Not all synthetic turf surfaces are created equal. No one component guarantees the required performance you should demand from a surface. Each of the components that goes into making a synthetic turf surface MUST work in harmony to maximize the safety and performance of the surface.
- The fiber, the infill, the backings, all contribute to the design of a professional grade surface.
- There are 21 applicable ASTM tests for a synthetic turf system. Some are as common as a Gmax test and others are less obvious, like an ADA test for wheelchair access.

Cost of Synthetic Turf Fields	
Synthetic Turf	Price per Field
Non E-Layer	\$1,200,000
E- Layer	\$1,700,000
Lighting	Price per Field
	\$200,000 to \$300,000

The pricing is based upon a new (green) build site or a renovation within an existing open space. Assumptions for the above pricing include the following:

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Sports Turf Industry Fact Sheet

The Department of Plant Sciences at the University of Missouri released some interesting statistics regarding the U.S. Sports Turf Industry based on a survey that was conducted within the Sports Turf Managers Association.

Overview

- The annual purchases of sports turf products and services is over \$1.29 billion on over 2.8 million acres. That's approximately \$457 per acre. These figures do not include salaries.
- Parks and recreation makes up \$480 million in annual purchases while schools are at \$685 million, college/universities \$71 million, and professional facilities spend approximately \$52 million.
- Professional sports facilities average approximately 15 acres spending \$4,333 per acre, colleges/universities spend \$1,075 per acre on an average of 30 acres, schools spend \$658 per acre on an average of 65 acres, and parks spend an average of \$284 per acre over 130 acres.
- Average annual spending on equipment and supplies at colleges/universities is \$32,300, while parks spend \$38,850. Schools spend \$42,750 and professional facilities spend \$65,000.
- It is estimated that there are approximately 16,000 schools, 2,200 colleges/universities, 13,000 parks, and 800 professional facilities.

U.S. Sports Turf Managers

- The average sports turf manager has worked in the industry for 13 years.
- Typical manager has been in his/her current position 7.5 years, while 38% had more than 10 years tenure in their position.
- Twenty percent of managers have a single field to maintain.
- Forty-two percent of managers maintain 5 – 10 fields.
- Two in three sports turf managers have a four-year college degree or an advanced degree.
- The average crew has 16 full-time and five part-time.
- Seasonal staff average is approximately nine.

Root Zones

- Cool-season bluegrass fields: 81% native soil, 19% sand based.
- Warm-season bermudagrass fields: 82% native soil, 18% sand based.
- Sports turf managers expressed a 3 to 1 preference for sand-based fields. Major reasons: (1) Greater resistance to compaction and (2) Better playability under wet conditions.

- Greater soil strength was cited as the most important advantage of native soil fields.
- Loss of nutrients to leaching was the major problem encountered with sand-based fields.

Mowing

- Frequent mowing is essential for healthy, dense turf because it reduces scalping, disease incidence, the need for sweeping and it improves field appearance.
- Of those surveyed, all mow more than once a week - 2 times (21%), 3 times (30%), 4 times (9%), and daily (40%).

Soil Testing

- Annually (42%), 2 times annually (22%), 6 times annually (10%), 12 times annually (2%), bi-annually (22%), tri-annually (2%).
- More frequent soil testing was reported by managers who have sand-based fields.
- The use of tissue testing is a standard practice by 44% of survey respondents.

Fertilizers

- All managers use more than one type of nitrogen fertilizer (soluble, slow-release, specialty, and natural organics).
- Sulfur-coated urea (SCU) was the most widely used slow release source due to acceptable performance and lower cost per unit.

Irrigation

- Eighty percent of sports fields have pop-up sprinklers, 11% have water cannons, 7% have quick coupler, and 2% have travel or tow impact sprinklers.

Interested in seeing the entire survey? Go to the following link:
<http://turf.missouri.edu/stat/reports/pdf/industry.pdf>

Thank you to Brad Fresenburg, Assistant Extension Professor, Division of Plant Sciences, University of Missouri for permission to reprint. Turfgrass Producers International, TPI E-Newsletter, October 2012.

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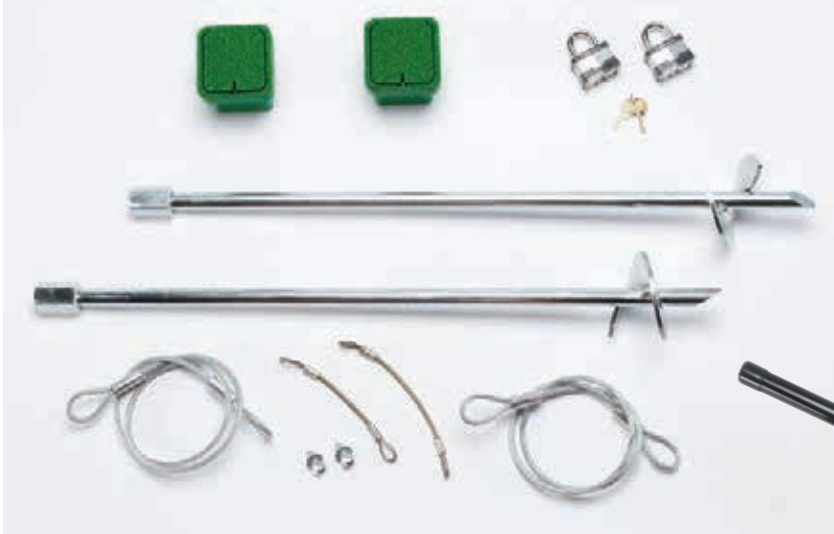
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