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On the cover:

The Spartan mascot for The Steward School, Richmond, VA, celebrates the school's STMA 2013 Field of the Year Award for Schools/Parks Baseball. Mark Roberts, Athletic Turf and Field Manager for Steward, is a one-man show for the winners.





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From the Sidelines

Eric Schroder
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Winter is coming

I write on the first day of autumn, a windy day in south central Pennsylvania that won't see 70 degrees. Earlier today I made note of which tree branches threatening the house need to come down before the snow flies, and thought I would share some ideas for preparing your football or soccer fields for winter in the cool-season turf regions. I turned to a great source of information—STMA's Technical Bulletins, available at www.stma.org.

"Cool-season grasses get a flush of growth in the fall. It is important to fertilize these grasses during this time to maintain healthy growth and enhance recovery from wear. With proper fertilization, your field has the best chance to go into the winter with a high amount of turf cover. Apply 1 lb. of nitrogen per 1000 ft² in mid-October and after the first hard frost. You can wait until after the season to combine the final fertilizer application with post-season hollow-tine aerification and seeding. Do not apply excessive amounts of nitrogen within a few weeks before the first expected frost. Too much N at this time results in extreme plant succulence, which can lead to cold injury.

"Begin overseeding following the first game with perennial ryegrass and continue seeding throughout the season. Over time you will build a "seed bank" that will help maintain cover during the fall and into the winter. Also, some of the seed that does not germinate in the fall will germinate in the spring. Focus your overseeding on the high wear areas . . . if you can maintain turf in these areas you will have fewer weeds in the spring.

"Fill divots throughout the season with divot mix that contains sand/soil, organic fertilizer, and perennial ryegrass seed. This will help ensure a divot-free field in spring.

"Depending on your location, your turf may be able to begin to recover from damage after the season if it is still actively growing. If turf growth has stopped, you can still take steps to ensure your field survives the winter. Lower your mowing height to reduce your chances for

snow mold outbreaks and damage. Even if your turf is dormant, aerify with hollow-tines and seed so you do not have to worry about it in the spring when your field may be waterlogged from spring rains.

"Applying topdressing in conjunction with aerification will also improve conditions in the spring. On native soil fields, consider topdressing with compost. Sand-based field should be topdressed with sand that closely matches the particle size distribution of the rootzone. Seed large, worn out areas; sod smaller worn out areas. Even if the sod is dormant, you can install it in places like soccer goal mouths. As soon as the weather warms up, it will start rooting.

"Apply a fungicide to protect against pink and gray snow mold. Check with your local university for recommendations on which fungicides to use. Use growth covers. Growth covers create a greenhouse-like effect that allows seed to germinate and turf to grow during the winter. Consider using growth covers in your high wear areas after you have seeded them. Be sure to apply a snow mold fungicide and remember you'll probably have to take the covers off periodically so you can mow.

"Preemergent herbicides can be applied in late fall for spring weeds BUT it is important to not overseed if you apply a preemergent herbicide because the herbicide will prevent your seed from germinating. If you need to overseed, you can kill weeds in the spring with postemergent herbicides." ■

Correction

There was an omission in last month's article on winter weeds, page 12. In the 2nd paragraph, the 2nd sentence should have read: "In a study conducted during the winter of 2013-2014, plots receiving simulated football traffic in fall contained 35 annual bluegrass plants per 9 ft² compared to less than 2 plants per 9 ft² those not receiving traffic (Figure 1)." We regret the error.

Eric Schroder

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Tricks and treats

October in New England is always a great time of year. The temperatures are comfortable, the grass performs well, the colors are beautiful, the fall sports are in full swing and Halloween is celebrated. The tricks and treats I want to talk about involve you as a professional and as a person. You should have all received your conference brochure. In it you will find educational sessions, networking opportunities and trade show hours that will give you more tricks of the trade you can apply to your facilities.

Some may be little tricks like mowing different ways to get a striping affect or getting info to develop a field use policy. Some may be larger tricks like using drill and fill to help your compaction and drainage issues or using growth regulators in your line striping program. Your Board works diligently to provide these opportunities to you so you can succeed in delivering safe, playable and aesthetically pleasing fields.

This is a great time of year to let others know about STMA and the many ways the organization can help them in their jobs.

When I was younger I always wanted to dress like Batman or Spiderman for Halloween. You have the opportunity to be the superhero for your facility and deliver a field that will make young and old, amateur

and professional alike have memorable experiences. The trick is learning what will and won't work for your particular field. You also have the ability to pass tricks of the trade on to others. Take part in discussions, answer questions and show how you do things. Even if someone picks up one little trick you have done a great service to the profession. This is a great time of year to let others know about STMA and the many ways the organization can help them in their jobs. Being an STMA member is a pretty cool thing.

Now for the treat part. Any sports season means long hours and all of our focus on work. Did the field get mowed and at what height? Did the paint arrive in time to do a great logo? Do I have time to squeeze in overseeding? When can I irrigate? Where is that weather forecast? All of these things and many more are important to getting the job done right.

In the middle of this do not forget to treat yourself so you don't burnout or develop the wrong attitude. It may be tough but once in a while just go for a walk and enjoy the surroundings. Go grab an ice cream and sit down to enjoy it. Share a pizza with your crew. Break away to watch your child's soccer game. These are the treats we need to give ourselves so we can come back and give our all to having the best fields we can. Another reason to go to conference is to learn some of the tricks to balance your professional and personal sides. Take advantage of your opportunities, learn new tricks and treat yourself right. ■



Environmental conservation: one sports turf manager's story

▲ **Field capacity** is the amount of water the soil holds in its micropore spaces within the soil.

I never thought I would be writing an article with Environmental Conservation in the title, but as I reflect on how sports field managers do their job that is exactly what we are trying to accomplish. We are all trying to create an environment in which both grass and athlete can have success. When it comes to athletes we all make safety our priority. While making the fields safe, we are usually doing something to the fields to help it thrive in the environment in which it lives. Conservation for a sports field manager could include irrigation practices, pesticides, fertilizers, and cultural practices.

IRRIGATION

Irrigation across the country means many different things. Some are being faced with major water restrictions while others of us irrigate freely without much thought given to water shortages. As I have managed multiple fields and systems in the past years, I like to think that I am getting better at conserving water. For

me it started by understanding some of the technologies that are available and not pulling a plug and feeling the soil every afternoon. Instead I started using two particular technologies in tandem; ET (evapotranspiration) rates and a TDR (time domain reflectometry) soil moisture meter.

Using ET can be accomplished a couple different ways. We have our own weather station next to one of our practice football fields that reports the data to our central irrigation system. This allows us to have weather data very close to the facilities that we are managing. Obviously there is some cost associated, but the water we have saved has more than paid for the weather station. We irrigate with city water, so only watering with the amounts of water necessary can save money in hurry.

The other way to use ET is by using your local weather reports. Many of the common weather websites report ET rates for the day. You should be able to see the ET for the day and set irrigation run times

accordingly. Using ET is only effective if you know your precipitation rates of your irrigation system.

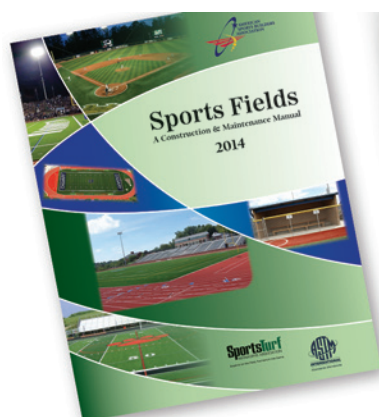
TDR soil moisture probes or TDR soil moisture readers that are placed into the soil permanently are great at giving you an idea of how much moisture is in the soil. Every soil is different, so it takes a little work to understand how to use this effectively to set up irrigation. You will need to figure out what moisture level is Wilting Point and Field Capacity. This doesn't have to be perfect, but getting this close is very helpful. Drying down the field until it wilts and then measuring the moisture level will give you an idea of what Wilting Point is for that soil.

Field capacity is the amount of water the soil holds in its micropore spaces within the soil. This is when the soil is slightly damp and water can be squeezed out of the soil with a little effort. Again you want to be close, not perfect. If you know what field capacity and wilting point for your field are then you can target your irrigation cycles to be somewhere in between those two values. If you irrigate much more than field capacity you could be wasting water going through the soil profile quicker than the plant can use it or its running off the surface in a saturated state. In the real world we probably irrigate slightly above field capacity, but are really just trying to keep the soil at field capacity.

Understanding your precipitation rates for your irrigation

system is very important. I won't be able to give a lot of detail on this in this article for the sake of length, but figuring out how many inches an hour your system irrigates is very important when understanding how to schedule your run times. If you don't know your precipitation rates than you're just guessing with your run times. Guessing could lead to over or under irrigating. Either way it's not an efficient use of water. Auditing your irrigation system isn't terribly difficult if you wanted to do it yourself or there are companies that could do it for you (see *SportsTurf* August 2014 issue, page 30 on how to conduct an irrigation audit). Sometimes spending some money on the front end can save you money on the back end.

If you understand and use ET, TDR probes, and precipitation rates you would absolutely be justified in using the water you do to deliver safe and healthy athletic fields. There are other things like rain sensors and central irrigation that can help make you more efficient as well. The point to all the irrigation tools is to help you conserve water. Remember, you're conversationalists even if you didn't know it. Ask yourself if you do everything you can to conserve water, even if it's readily available. There are times for playability you may abuse water, but that should only be justified for player safety. The rest of the time you should be trying to conserve as much water as possible.



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▲ The outside booms on this sprayer are each their own single zone and are automatically controlled by GPS. This doesn't allow any overlap and closely monitors flow rates and application rates from the operator's seat.

PESTICIDES

The other area where technology has really helped me conserve is pesticide application. Living in the land of corn and soy beans, I was seeing GPS technology being used everywhere. Why not on our fields? was the question we asked. So we built a sprayer (with John Deere's help) that is GPS-equipped. The outside booms are their own single zone and are automatically controlled by the GPS controller. This doesn't allow any overlap which means we never double apply anywhere and can closely monitor flow rates and application rates from the seat of the sprayer.

The other bonus that I didn't expect is that we can now apply at twice the speed we used to and are far more precise. Using this technology shows that we are committed to applying chemicals responsibly and as accurately as possible. It could also lead to pesticide reduction if you have vast areas that you're spraying or struggle with small overlap areas.

GPS technology is not available to all sports turf managers due to costs, but thinking about ways to reduce overlaps and making sure application rates are correct is an important part of being a conversationalists. It is our responsibility to make applications as accurately as possible.

FERTILITY

Another practical area for conservation is fertility. Regular soil tests and plant monitoring is absolutely necessary. Soil tests don't have to be done every year, but they should be done often enough for you to know what's going on with your soil. Fertilizing to specific soil needs is not only going to save you money, but it will also save on nutrient fate in the environment. Each year is different with rain, temps, and field use.

Thinking about all components of what the soil, environment, and field playability will help you justify fertility needs. If you are doing this before fertilizing then you are conserving when you maybe didn't know it.

CULTURAL PRACTICES

Cultural practices are another way we act as conversationalists when we may have not realized. If you are keeping sandy and native soil fields free from compaction and consistent throughout the soil profile you are giving the plants an environment to grow healthy with fewer inputs. If the plants can grow roots and respire more efficiently you will have a healthier grass stand that may need fewer inputs like fertilizers and pesticides. So keep poking holes, pulling cores, and slicing the fields you have. It may save you from disease and other issues that arise when the soil profile is compromised.

Conservation, many of you are already doing it. My hope in writing this article was to share some of the things we do at Iowa State University to help conserve the environment we have. Many of you already conserve, don't be afraid to share those details with your superiors. The general population needs to know that managing natural grass fields is a very specific science and we as sports turf managers take it very seriously. Sharing that we are conversationalists could help change the perception that some people have toward our industry. ■

Tim VanLoo, CSFM, is manager of athletic turf & grounds for Iowa State University and the Higher Education representative on the Sports Turf Managers Association Board of Directors.



▲ Jack Trice Stadium, Iowa State University, Ames, IA.



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Rolling with the cool kids

If you really think about it, you could say that athletic fields are the cool kids of turf management. People will drive for hours, pay hundreds of dollars, and brave the worst weather conditions imaginable just to get a seat as close to them as possible. National and international television broadcasts are fixated on them for hours at a time. Heck, athletic fields have even been showing up fashionably late to the turfgrass management party for decades.

» Research has proven that frequent and consistent rolling **can provide a faster (smoother) putting surface**, along with many other benefits that may not seem quite as obvious

Taking a quick look at the methods used to manage both athletic fields and golf course greens, it is rather easy to pick up on the similarities. When you glance a little closer, you'll find that virtually every one of these methods was originally honed by golf course superintendents across the world and then, typically years later, adopted by sports field managers everywhere. Tactics such as stripe mowing, applying sand topdressing, and core cultivation were at one time unique to putting green management and have since become commonplace on virtually every competition athletic field in the world; and because of it, the quality of those fields has improved dramatically!

"So who's showing up next to the party?"

One common management technique used daily (and sometimes more) by managers of golf course greens is routine lightweight rolling. Although, it has yet to gain similar popu-

larity in athletic field maintenance, it is a cultural practice used in managing turf that dates back as far as the 18th century on golf courses. Since this time, and particularly in the last quarter century, routine lightweight rolling has become an essential tool for golf courses. Research has proven that frequent and consistent rolling can provide a faster (smoother) putting surface, along with many other benefits that may not seem quite as obvious (and we'll discuss those a little later).

Although used on occasion during special circumstances, such as alleviating frost heaving or as a part of seeding/sodding projects, a roller is yet to become an everyday piece of equipment on a sports field. A rare field manager might swear by the benefits he or she gets from the consistent use of a lightweight roller, but it is definitely the exception rather than the rule.

Since we're on the topic of cool kids, I thought: Who's funnier, more popular, and just plain cooler than David Letterman? So why not use a Top 10 list to examine whether lightweight rolling might be the next cultural practice that began in golf to become a staple on athletic fields?

Let's take a look at the 2014 Canadian International Turfgrass Conference & Trade Show presentation given by Dr. Thom Nikolai of Michigan State University on his Top 10 Reasons to Roll Course Greens:

10. Alleviate heaving and minimize scalping when climactic conditions dictate.

Nikolai talks about the freeze/thaw cycles contributing to uneven surfaces on golf course greens, and it certainly applies to athletic fields as well. This is undoubtedly the current most common reason for rolling athletic fields. Rolling not only helps to smooth out a bumpy playing surface but it can also protect against scalping during the first spring mowing.

9. Seed bed preparation.

This is another reason that rolling logically translates from golf to athletic fields, where it is certainly time well spent when prepping a site for establishment by seed. In addition, rolling immediately after seeding is a great way to ensure that you achieve the all-important seed-to-soil contact required for germination and nutrient uptake. Similar benefits from rolling can also be seen when establishing an athletic field by sod. Lightweight rolling after sod installation can help create consistent contact between the soil and roots of the new turfgrass.

8. Broadleaf weed, moss, and algae reduction.

Although moss and algae tend not to be as big of a problem on an athletic field as on a low mown putting green, broadleaf weeds certainly are a common menace. Dr. Nikolai's Top 10 list hypothesizes that an increased turf density could help to out-compete unwanted pests such as dandelions and white clover. This could be especially beneficial for managers of school athletic fields who are required to

use little to no chemical herbicides and where they are prohibited by legislation.

7. Decreased localized dry spot.

Research has shown that rolled putting greens experienced less localized dry spot, while the soil samples showed that the rolled plots retained more moisture and had greater root mass than those that were not. On an athletic field, the impact of increased root mass from rolling would be even more meaningful than on a golf course due to its positive effect on turf stability and, ultimately, athlete safety. Preliminary data from an athletic field rolling study at Michigan State University (**Fig. 1**) shows that rolling athletic fields five times per week may potentially increase root mass of a Kentucky bluegrass field maintained at 2.5 cm. More evidence needs to be seen to draw any conclusions on this and it is being evaluated further.

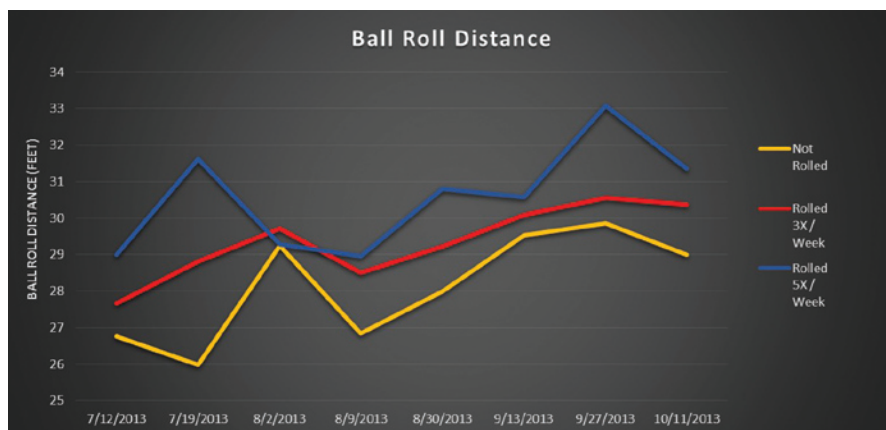


Figure 1. Preliminary data from an athletic field rolling study at Michigan State.

6. Height of cut raised and green speed retained.

Ongoing athletic field research at Michigan State University also shows promising results in regard to the possibility of routine rolling yielding a smoother, faster surface, just as it has on golf course greens. A soccer field gauge, which is essentially soccer's version of a golf Stimp meter which measures green speed, was used to determine surface smoothness. Plots rolled five times per week were found to be faster than plots that were not rolled (**Fig. 2** on page 14). The thought of being able to create a surface that plays quicker, and more importantly is smoother and more consistent, would have the attention of athletes and coaches in such sports as soccer, baseball, lacrosse, and more.

5. Decreased cutworm activity—maybe!

Cutworms do their damage by feeding on roots and shoots of a turfgrass stand. This damage is much more evident and devastating at lower cutting heights, such as on putting greens, but can even become a problem on grass that is cut at home lawn height (7-10 cm). Anecdotal evidence indicates rolling may decrease cutworm activity on golf course greens and thus lead to a healthier, stronger rooted turf.

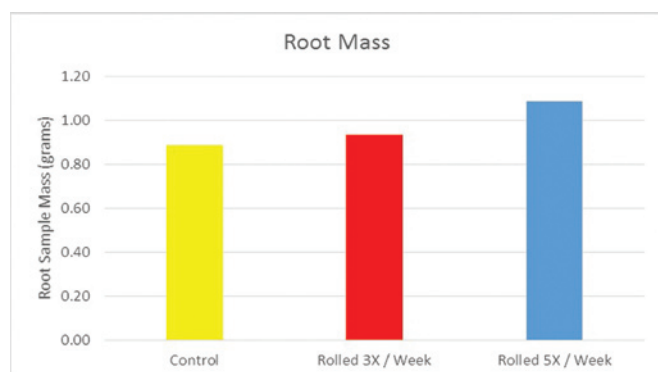


Figure 2. Plots rolled five times per week were found to be faster than plots that were not rolled.

4. Improved topdressing incorporation.

As indicated earlier, topdressing is one of the many cultural practices that athletic field management has adopted from the golf course industry. Sand topdressing needs to be incorporated into the root zone allowing it to serve its intended purpose beneath the canopy. No research has been performed specifically with athletic field rolling, but vibratory rolling after topdressing has been proven to be better for working the sand into the soil profile. Performing your athletic field rolling following a topdressing application might very well add one more benefit.

3. Decreased dollar spot.

One of the most impressive findings amongst the vast amount of research on rolling greens is the continued observation of decreased incidence of dollar spot. With the reason for this phenomenon being rather involved and somewhat intangible, the translation of this benefit to an athletic field setting currently stands at “to be determined” due to the current lack of dollar spot for athletic field rolling.

2. It's the economy (rolling/mowing frequency programs).

Cost savings analyses of greens rolling have focused on a rolling/mowing trade off in which labor, fuel, and maintenance costs are all considered. Alternating rolling and mowing, as opposed to mowing every day, is said to save time and money (both fuel and maintenance costs), while also improving wear tolerance and yielding similar green speeds. If comparable conditions can be replicated with this method on athletic fields, these cost savings could certainly be seen. This tactic could be particularly valuable on fields that do not receive play on a daily basis, and thus may not require a fresh mowing as often.

1. Increased customer satisfaction.

The customer of a golf course, the golfer, is satisfied by many of the same things as the customer of an athletic field, the athlete. Both desire a smooth and consistent surface that will allow them to direct their concern toward their own performance rather than that of the turf. Routine lightweight rolling has been proven, through research and application, to help give golf course customers what they want. There is definitely

some evidence that rolling can deliver the same to athletes.

Now with all these potential benefits, what has prevented the majority of groundskeepers and field managers from joining this rolling revolution seen in golf over the last 20+ years? Just as was once the case in golf turf management, the concern that detrimental effects caused by consistent rolling will negate, or even eclipse, its benefits has caused many sports field managers to balk at the idea.

Certainly the number one concern with consistent rolling of athletic fields is the potential for compaction, and rightfully so. A compacted field can create an unhealthy turf stand, as well as create poor drainage and fields that are unplayable during any type of rainfall. Surface hardness (a measure of compaction) is being observed closely in all athletic field rolling studies at Michigan State. To date, there has been no statistical evidence of any significant compaction (Fig. 3), however if a field manager chooses to implement a routine rolling program, he/she should do so with caution. Compaction is greatest when forces are applied to the wet ground, especially on fields with high silt/clay content and rolling should never be done on saturated soil. Additionally, on any

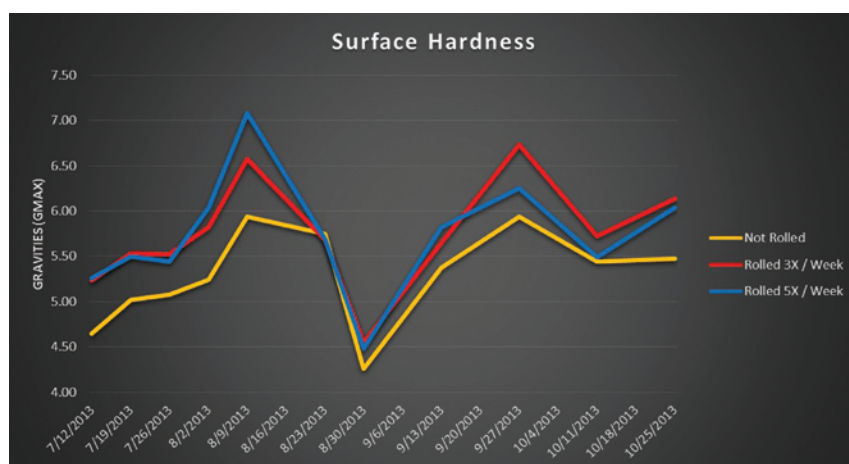


Figure 3. There has been no statistical evidence of any significant compaction.

field where frequent rolling occurs, regular core cultivation/aeration should also be done to counteract any potential compaction that may happen over time.

Furthermore, rolling should be done with extreme caution during potential periods of stress on the turf. Rolling during drought, heat, cold, or disease stress will only intensify or spread the negative effects incurred during these harsh conditions.

Overall, the evidence to support rolling golf course greens is strong and rarely debated. However, there currently just seems to not be enough research and experience for most athletic field managers to follow their superintendent counterparts in this practice. Early research is beginning to show that routine rolling of athletic fields is worth looking into, with more research and in every day practice. Only then will we get the chance to see this cultural practice roll through the door, fashionably late. ■

Nick Binder is a Crop and Soil Science graduate student working under Dr. Thomas Nikolai at Michigan State University in East Lansing.

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RENOVATING Parkview Field in Fort Wayne

Renovation of a baseball field at the amateur, collegiate, or professional level can be a daunting and expensive task. However, when the condition or appearance of a field warrants a “makeover,” dollars should be secondary to player safety, and at the professional level, the overall aesthetics of the playing surface.

In the fall of 2012, Parkview Field in downtown Fort Wayne, IN home of the San Diego Padres Class A affiliate Fort Wayne TinCaps, was the site for a complete field renovation. Constructed in the fall of 2008 for a spring 2009

opening, the field was dominated by *poa annua*. Despite winning Midwest League Field of the Year awards in 2010, 2011, and 2012, the front office, field manager, and city officials (the ballpark is owned by the City of Fort Wayne), agreed that field replacement was necessary.

Planning for the project actually began a year earlier as The Motz Group, the original field contractor, was contacted in regards to a replacement schedule. Pre-renovation planning is paramount in paving the way for a smooth, efficient, and cost-effective agenda. First and foremost, the dollars need to be allocated to do the work. Most complete field renova-





tions of sand-based fields cost in the \$200,000-\$250,000 range. A presentation made to the city's Redevelopment Commission in the fall of 2011 confirmed the dollars for the labor and materials (sod, rootzone, warning track material), setting in motion the process of selecting the sod farm. Graff's Turf Farm in Fort Morgan, CO was selected based on the quality of their short-cut, 100% bluegrass. A July 2012 visit to the farm to inspect the turf plot confirmed everything was in place for the harvesting and shipping that fall.

Furthermore, consultation with our front office on limiting the number of games and events in 2013 played a key part in assuring a successful grow-in. No other baseball games were scheduled besides the TinCap's dates, and other on-field activity was restricted until the fall, giving the field almost an entire year to develop.

Work began on the field the second week of September after the team made a run to the Midwest League finals, and 2 weeks before a major on-field running event the last Saturday of the month that brings more than 10,000 runners to Parkview Field. The entire oblong infield horn (created during initial field installation) was reconfigured, constructing a more traditional 95-foot arc from the mound. This meant removing large amounts of clay and sod from areas to establish the new symmetry. This work was all done by the grounds crew with a 3-ton mini-excavator and a lot of hand digging and edging.

On October 1 The Motz Group moved in with their Koro Field Topmaker and began stripping and grinding the existing sod layer. The Koro conveyor shoots the pulverized material into trailers pulled by tractors to get the debris off-site. More pre-planning put in place bagged meters and traffic control devices to block off a lane of parking and traffic on the road adjacent to the field ramp. From there, 700 cubic yards of material was hauled away thanks to a large front loader and 30-35 dump truck loads.

As the sod was stripped from infield, baseline, and warning track edges, re-working of all edges was done with hand spades by the grounds crew. This is the only chance you ever get to create a new edge, and meticulous attention and time was spent to make the rootzone, clay, warning track transition zones as perfect as possible.

All 88,000 square feet of sod was stripped in 2 days. As the rootzone was exposed, 70 tons of new 92% sand, 8% peat was brought in and laser graded. The infield turf area was dropped from a .1% grade to level, and all the outfield and sidelines were laser graded to spec. At this point we were ready to sod, but . . .

» A total of **22 trucks** bearing anywhere from 20-22 rolls made the hike to Fort Wayne.

With an extremely high content of *poa annua* infestation in the field, the decision was made to fumigate the entire turf area before the new sod was brought in. Using Basamid (dazomet) dropped from a 36-inch drop spreader, a 10-day window was allowed to kill off any remaining *poa* seed or plant material. Fumigation is based on soil temperatures and moisture. Moisture causes the release of vapors which penetrate the soil particles and upon contact, kill plant matter, seeds, insects, and anything living. The higher the soil temperature, the faster it works. Because dazomet is a restricted product, application was made using a respirator and full Personal Protection Equipment (PPE) attire. Additionally, barricades and posted signs around the ballpark restricted access to the field area as gases were emitted.

After a 10-day fumigation window, work resumed on October 15. Before that, an organic granular starter fertilizer (5-6-6) was applied on the exposed rootzone at a rate of 10lbs/M. The maxi-rolls of Graff's short cut bluegrass began to arrive on flat bed trucks from Colorado, which was a 1,070 mile one-way trip! A total of 22 trucks bearing anywhere from 20-22 rolls made the hike to Fort Wayne. Assistant groundskeeper Andrew Burnette off-loaded the rolls with a skid steer and The Motz Group crew went to work, rolling out sod and pulling in seams. The TinCaps grounds crew concentrated on perfecting edges while Motz laid "the carpet." At the end of Day One, the infield and skirts were completed. After waiting on the intermittent arrival of sod trucks, it took 2 more days to finish the outfield. When all 88,000 square feet of new sod was in place, another round of granular starter fertilizer (5-6-6) went down at the same rate. A couple of days later, we began our foliar fertility with a good dose of micronutrients, potassium, and magnesium.

October 22, 22 tons of DuraEdge Pro infield mix arrived for infield lasing grading. The skin and base paths were pulverized with a Blecavator, the infield mix was worked in, laser graded, and rolled. An additional load of warning track material (crushed lava rock) was distributed on the edges to bring all the new turf edges flush.

Our fall granular organic program commenced two weeks later with a 21-3-7, followed by two more foliar applications in November,



and finally another 21-3-7 granular in early December. A shot of PCNB before the first major snow fall had us prepared for winter and the establishment of some good root mass.

Excellent color remained in the turf until time for the January

surface and intrinsic beauty that should be the goal of every sports turf manager. ■

Keith Winter is head groundskeeper for the Fort Wayne TinCaps.



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John Mascaro's Photo Quiz

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Brown lines and bare spots

Turfgrass area: Football practice field

Location: Hampden-Sydney, Virginia

Grass Variety: Savannah bermudagrass

Answer to John Mascaro's Photo Quiz on Page 23



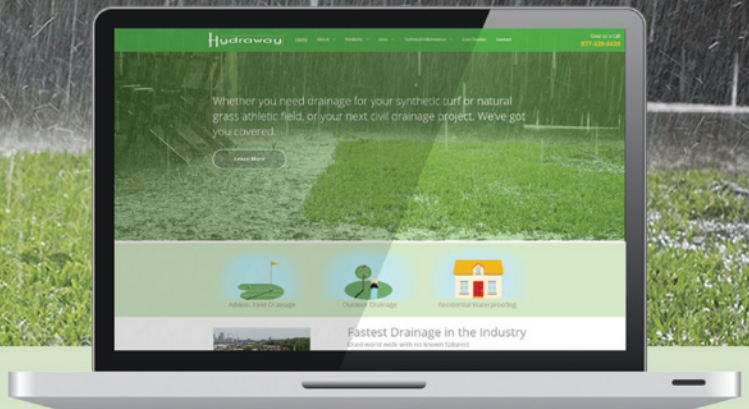
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Crew management: handling your most VALUABLE ASSET

I quickly discovered after taking a job with the City of Phoenix Parks and Recreation department 13 years ago that managing the turf was going to be the “easy” part of my job. I had gone from a staff of two (including myself) to a staff of 14. Doesn't seem that complicated, right?

Managing the crew soon became the biggest issue I had. The 10 main things that helped me to become a better manager are:

Learn what each individual's strengths and weaknesses are. Work them to their strengths, while teaching them to improve on their weaknesses. Take the time to work one-on-one with staff to learn how they work. Do they hate line trimming? Do they love infield work? On the job training is great, but also take advantage of classes and seminars through your local STMA chapters and other organizations. There is something about getting off-site that helps to improve learning. Seeing how other facilities handle situations is another great learning opportunity.

Be organized! Know what needs to be done and delegate tasks evenly to the crew. Part of this is knowing how long each task will take as well as which tools and equipment will be involved so that everyone has access to what they need. Asking someone to do a job only goes so far if they don't have the proper tools at hand to accomplish the job. Set your staff up for success, not failure.

Communicate! I can't stress this enough. Staff will not know what you want them to do, or how you want them to accomplish it, if you do not tell them! Seems basic, but it is often overlooked. Take the time to go over details, and ask staff to repeat them back to you to make sure that they heard what you were trying to say. For instance, you might ask an employee to trim the trees by the football field up above 8 feet, and what they hear is to trim the trees by the baseball field into shrubs. This will show you that more clarification and instruction is needed.

There are many ways to manage. Take the time to find your style, all the while remembering that people have their own way of learning, so be flexible.

Do not play favorites. You will naturally have crew members with whom you feel more comfortable. Do not allow this to cause you to treat anyone with favoritism. Make sure to distribute tasks evenly. Unless your situation does not allow it, teach all the staff to do all the jobs. Just because you mainly do infields does not mean that you do not need to know how to change a sprinkler head.

You aren't there to be anyone's

friend. While this can be hard to deal with, as people generally want to be liked, it is more important that you are the boss. It is important that you stand up for everyone, and don't allow yourself to be taken advantage of. However, respecting everyone is essential. This doesn't mean you can't actually be friends, just be as impartial as possible to avoid accusations and unnecessary conflict.

Take careful notes of issues. Keeping detailed notes will allow you to see when patterns in behavior appear, as well as to follow a progressive plan of discipline. For me, this is done by keeping a file on each employee in a locked cabinet in my office. If something happens, I simply jot a note and drop it in the file. It may turn out to be nothing, but if it escalates, I have it covered. This is a great help when it comes to doing annual reviews. What you think you will remember in June is a distant memory the following April.

Be consistent with discipline. If you don't have a company policy/plan for discipline, create one and stick with it! An example is:

- 1st offense: coaching
- 2nd offense: written reprimand
- 3rd offense: 1 day suspension
- 4th offense: 3-day suspension
- 5th offense: termination

Each issue, from attendance to how to handle equipment, should be discussed with staff upon hiring. Rules should be well known to avoid the excuse of "I didn't know I couldn't do that".

Always discipline in private. While general statements can be made to the entire crew, keep actual discipline and details private. This is essential to keep respect between you and the staff. No one wants their dirty laundry broadcast on the news.

Always remember the Golden Rule. Treat others as you wish to be treated. This is huge. Staff will almost always respect you if you respect them. Remember that their lives don't revolve around the job. They have families, friends, pets, etc. Be aware that if someone is having a bad day, it may not be related to work. While issues need to be addressed, allow some wiggle room for when things may take a turn for the worse. Make sure to offer assistance programs if they are available through your organization. Sometimes everyone needs a little help.

Lead by example. You can not expect someone to do something that you yourself aren't able or willing to do. While you don't have to be Superman/Woman, you have strengths and weaknesses too, showing staff that you can do the job goes a long way to gaining respect. When staff knows what you understand and are capable of doing the jobs they do, they tend to do a better job themselves.

There are many ways to manage. Take the time to find your style, all the while remembering that people have their own way of learning, so be flexible.

And one last thing: never be afraid to ask for help. Someone you know has probably had the same staff issues you are dealing with, and will be able to help you figure it out. So join your local STMA chapter and talk to your co-workers. They are an invaluable source of information. ■

Sarah K. Martin, CSFM, works for the City Of Phoenix, Parks and Recreation, Special Operations Division and the Reach 11 Sports Complex.

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Does going Green SAVE YOU GREEN?

Editor's note: The author dedicates this article to Kevin Trotta, who has paved the way for him and many other sport turf managers in environmental stewardship. Kevin was taking responsibility for his own actions and leading the way for the past 20 years, long before most of us ever heard of the environmental issues we are facing today.

▼ **A bermudagrass field** the author sprayed at St Mary's College of Maryland with Revolver herbicide to take out the ryegrass for winter play; it also controls other grassy weeds and can reduce the amount of product you apply.

The question I get asked often is, Does going green with an Environmental Management System (EMS), is does is save money in the short or long-term? This is a loaded question and one that needs to be looked at by an environmental committee within your organization; first to determine if cost savings can be made and ultimately, if you should get started on an EMS.

The first thing the committee will do with an EMS proposal is conduct a benefits analysis and return on investments (ROI) analysis from practices. A few examples of areas that will need analyzing before determining budgetary implications of an EMS is the practice of reducing greenhouse gasses, recycling and storm water runoff. There is a chance these areas in particular could cost your operation budgets 25%-50% more per year.

The term I use for these possibilities is called unintended financial consequences (UFC). So, how can you formulate an EMS plan that works for you and is cost effective for your budget?

You might already have an environmental committee in place within your organization, but if not, it might be a great time to form one. With all the pressures of today to do more with less and the community pressures of being more sustainable, a committee will be able to bring together ideas and initiatives that build the buy-in from your senior administration and stakeholders. You can really call your "green team" anything you wish, but it's commonly known has a sustainability committee, or an environmental committee. The next thing is who should be on the committee? To have a dynamic and functional committee, there needs to be folks on the committee that can make sound decisions for the direction your complex wants to go environmentally while taking into account master planning or a direction of goals that your facility is working toward.

The folks that make these decisions for this process are typically your stakeholders. The next person at the table should be your financial person; he or she can help aid in the process of offering cost analyses for sustainability investments with an ROI, but this won't work unless the team has the right technical areas represented to provide the



▲ **Above Left:** An example of a naturalized area out of playing area. **Above right:** Spraying an iron-based, environmentally friendly herbicide on the main campus lawn at Vassar.

John Mascaro's Photo Quiz

Answers from page 19

John Mascaro is President of Turf-Tec International

This photo was taken June 1 and these brown lines are bare spots are a result of spring traffic. What you are looking at is early morning tracks from where the college football team crossed over the bermudagrass practice field during spring practice to use the synthetic field located on the far side of the photo. Very early each spring morning, for an entire week, the coaching staff drove their cart across the same area. You can also see the team's footprints on the right and an area where they ran some offensive drills off to the left. The sports turf manager assumes the drills took place because he was not yet at work on the day that this took place. The sports turf manager pondered for several weeks why the bermudagrass was so worn out and how it got so thin in such a short

period of time. Then he remembered during that week they had early morning mild frosts on the ground and the constant foot and cart traffic combined with the frost eventually killed the turf. Over the next 60 days, they performed five core aerifications and weekly .25lb nitrogen fertilizations along with bi-weekly applications of a growth regulator. By the first week of August, 95% of the damage was grown over. This is a perfect example of the importance of educating coaching staff and players about the potential for frost damage during light frost events..

Photo submitted by Jon Hall, sports turf manager at Hampden Sydney College in Virginia.



If you would like to submit a photograph for John Mascaro's Photo Quiz please send it to John Mascaro, 1471 Capital Circle NW, Ste # 13, Tallahassee, FL 32303 call (850) 580-4026 or email to john@turf-tec.com. If your photograph is selected, you will receive full credit. All photos submitted will become property of SportsTurf magazine and the Sports Turf Managers Association.

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critical data for the analysis. Your financial representative will use the technical aspects from you and other team members from other trade departments to see if it is first feasible and second if it will work within your organization. Once this process is complete, the decisions rest on the stakeholders to see if they wish to invest in the idea(s).

So far we have three key members: a finance person that can determine cost analyses and baseline for a (ROI), the turf manager, and other trade department(s). We've also have taken the time to see if our planned efforts can work efficiently and productively and is of value to the stakeholders. Once the investment is approved, the next item to consider that can be a contributor to the success of your team and program, is to promote your EMS program through your webpage, local papers and signage throughout your facility.

So, assuming we have all the above criteria in place and we have the green light from our organization and stakeholders, where do we go from here? We kick off our solid EMS program. Luckily, the STMA has many hard working folks on the environmental committee that have already taken care of many of the components to this phase for you. The STMA Environmental Facility Report Card in particular will be of use. This report card developed has a very detail environmental property assessment for your facility environmental deficiencies or efficiencies.



▲ **Top:** Storm water used for sports turf. **Bottom:** The grounds crew pre-treating campus roads with a salt brine.

THREE CONCERNS

Recycling: When we recycle we're conserving our natural resources, i.e. water, energy, timber and minerals. These ingredients are items we use every day and need to recycle so as to not deplete them for the generations of tomorrow. Most of us have a recycling program within our facility these days.

Storm water management: The first half inch of storm water runoff is the most crucial to slow down. Sheet water movement from impervious surfaces that carry unwanted nutrients to our local water sheds is the most concerning. The key is to slow down rapid storm water runoff with the first half inch of rain fall, some ideas you may want to incorporate for your facility is later discussed in a key chart with an EMS program.

Take a look at your local rain averages so can predict when most of your rainfall occurs and which are your heaviest months in your local areas. Then install precaution measures of secondary containment to avoid spills from oils, gases, pesticides, fertilizers and detergents that can be carry off from heavy rain events. Storm water runoff are sediment oil, grease and toxic chemicals from motor vehicles, pesticides and fertilizers, sewage runoff, road salts ,heavy metals from roof shingles, motor vehicles and other sources and thermal pollution from dark impervious surfaces such as streets and rooftops.

Greenhouse gas: Do you remember back in the eighth grade when your science teacher was explaining sunlight by using the term electromagnetic radiation? These are known as short solar radiation waves; like tossing a pebble in a body of water i.e. the waves are very close to each other. Now remember Newton's third law "for every action there is an equal or an opposite reaction." The incoming solar radiation that is heating up ground surface is called infrared radiation i.e. the sunlight beating down on turfgrass or trees can absorbed some of the solar radiation waves and gives a cooling effect, but when you walk barefoot on asphalt or concrete it is twice as hot and you can actually feel the heat coming off of the surface. Infrared radiation is a long wave. This is like throwing a big rock in a body of water i.e. the waves will be much further apart. These are waves of electricity that are longer than visible light, but sorter then radio wave.

The word infrared means below the color of red and red has the strongest wave length that the human eye can see, but infrareds cannot be seen with the human eye. Infrared heat cameras can locate warm objects at night like buildings, motors of cars, warm blooded mammals by the heat they give off. This type of radiation wave shoots back into outer space aiding in the earths cooling process much like greenhouses do with its window open allowing hot air to escape into outer space. The earth has natural insulation called the atmosphere that is made up of several gases i.e. water vapor, fluorinated gases, and carbon dioxide, methane, and nitrous oxide and aerosol gases. A good analogy to give you a visual is that it's like the dust in the air from the sunlight beaming its rays through your widow, now imagine all those dust particles were gases in the atmosphere, this is what keeps us warm and provides ideal temperature for all thing to live and grow on earth. The problem is when the infrared radiation is bouncing off the earth; some of it is getting trapped in our atmosphere which could result in prolonged hot weather events.



▲ **Top Left:** Crew member applying fine fescue under all of our shade trees. **Bottom Left:** Vassar crew member applying compost on beach that is used for recreation sports and events. **Right:** This is a rain garden to capture the runoff from the field in background a St Mary's College of Maryland.

According to the EPA, the main greenhouse gas pollution abundances is carbon dioxide is from electricity, transportation and agricultural. We can reduce this from being efficient with our energy and fossil fuels and of course turfgrass and trees in landscapes will aid with the cooling effects.

PROPERTY ASSESSMENT/EVALUATION

Once you have your areas of environmental concern that your green team wants to address for your facility, develop an assessment program through a detailed plan of your complex assessment report. You can start by breaking down each part of your property described below.

Inventory Program:

- Exterior landscape. How many acres of athletic fields and common lawns do you have and what cultivar of turfgrass do you have? How many different types of trees and shrubs do you have and are they inventoried?

- Exterior paving: How many areas or square feet of sidewalks, parking lots and roadways do you have?

- Interior. How many buildings do have, including your grounds shop within your complex and what type fuel source do they use? Inventory all vending machines, bathrooms, unoccupied rooms, and naturally lighted hallways and every incandescent light bulb that can be changed out with an LED light.

Turfgrass Program. Dr. Dave Minner from Iowa State has three classifications of lawn maintenance examples he used to develop programs on a budget for stakeholders and sports turf managers. I love this concept because you can let the stakeholders know exactly what to expect without any repercussions or the sports turf managers because the bar is already set for the facility expectations. The three examples:

High End turfgrass program. This is high-level maintenance and will require multiple pesticides, topdressing, fertilizing and overseeding applications and aeration. The cost could range from \$0.10 - \$0.15 a square foot based on the expectations of your facility.

Medium program. This is a good quality turfgrass program; however, it is based on a strict budget with minimum applications of pesticides and fertilizers.

Low End program. This program is basically mow and grow with no pesticides and fertilizer applications.

You should already know which one you belong to. So, what environmental concerns or local community issues are you facing? Again, keep in mind nutrient and heavy metals runoff off from fertilizers and pesticides (depending on what type of products you are using) and lastly the amount of greenhouse gas you're producing from your equipment to maintain it are factors.

Using safer alternatives like KeyPlex, phosphites and microbial soil products in your rotation for disease control or just by themselves can aid in a ROI for turfgrass program. You might want to consider some of the new improved zoysia and Bermuda cultivars, if you are in or just a little north of the transition zone. If your first frost date is after your fall season of play, installing a warm-season grass for your athletic field or common areas might be a good decision. Your ROI could save money from fewer pesticides comparable to cool season turfgrass cultivars. Your EMS could showcase reduced amounts of nutrients and metals from storm water runoff. Also, showcasing your integrated pest management (IPM) efforts along with ET irrigation; using a weather station for efficient timing of pesticide application and water conservation could add to your EMS program.

Having naturalized areas could reduce costs from \$.04 - \$.10 a

square foot, based on your program per year for equipment, fuel, pesticides and fertilizer cost.

Fiestas (Fe) for broadleaf weed control or liquid corn gluten for pre-emergent control are costly and have to be repeated a couple of times to get maximum control. Have a program using 100% organic fertilizer works well and gives you the biggest bang for the buck, but it does require a lot of product due to its low N-P-K percentages. All of these products will have less environmental impacts on our ecological system and watershed, but do not come cheap and will definitely not have a comparable ROI compared to conventional pesticides and synthetic fertilizers; however, is a great tool for your EMS.

STORM WATER MANAGEMENT

Recycling storm water is a sustainable way of managing your storm water runoff that is collected from your facility drainage collecting systems. Collecting and reusing rainwater and recycling it for supplemental irrigation and gray water for washing equipment and toilet water can bring an ROI with thousands of gallons saved from the water meter.

Vassar College started using salt brine this past winter to pretreat our campus roads to reduce the amount of rock salt we using that could cause harm to our local watershed. We went with a 2-1 mixture of dissolving calcium choroid pellets to a gallon of water to make our salt brine. We found a great savings last winter from doing this and a 30% reduction on rock salt.

Trees help tremendously with erosion control, uptaking storm water runoff, and also from the photosynthesis process carbon/oxygen exchange. But it can also come with a costly price for certain sections of your property, if your trees are near power lines, buildings, parking lots etc. Trees can have a place for any sports turf manager's property, but they can also be in the wrong place, causing potentially hazardous conditions to life and property. I am not biased against trees or say they're not a great tool for your EMS system, but the facts show that from 1992-2007 the national average of fatal accidents related to tree maintenance is at 80 deaths per year. The national average cost from property tree damage from storm events is more than \$1 million a year; I don't think turfgrass causes that much destruction and yes, I know am going to pay for that comment (lol).

Trees placed strategically on your complex can be a suitable tool for your EMS, but does add maintenance. The average cost to maintain a tree has several variables, but let's just say that an average tree costs \$300 for maintenance and the canopy takes up 2,500 square feet. Using this example, the average cost is \$.12 a square foot, but you also have to add in additional indirect costs for items such as for shade tolerant grass seed cultivars and additional fertilizer cost for your turfgrass budget per tree.

Calculating storm water runoff from non-pervious surfaces can be challenging, and is influenced by several factors like pave surfaces or soil profile. A website by the State University of New York College (SUNY) of Environmental Science and Forestry University has one of the best storm water calculating tools. One topic is shows is that the capturing of 75%-85% of storm water runoff by installing rain gardens could help prevent flooding, high pressure currents in streams from downpour and reducing environmental problems for storm sewer systems.

Two details from that website: The first is that it calculates the percentage of storm water that is infiltrated within your athletic fields and common lawns areas, based off of your soil analyses and square feet. It also shows how much percentage of storm water runoff you are generating. The second tool is the amount of impervious surface you have in square feet and the amount of storm water runoff you might have from your site's roof tops, parking lots, sidewalks, tennis courts, roadways, etc.

Rain gardens do not bring in an ROI. In fact, they cost more than lawns do per square foot. The average cubic yard of mulch costs \$18 and there are 25.96 of cubic feet in one yard of mulch. National prices of mulch per yard vary, so let's do \$18 per yard as an average divided into 25.96 equals \$.069 a cubic feet at 1.5 inches deep. Now take your labor hours for weeding and watering the perennials, shrubs and trees that make up your plants for your rain garden during drought years and your labor hours will show as a deficiency.

GREENHOUSE GAS REDUCTIONS

Energy performance is becoming the buzz phrase for the last decade because it brings a substantial ROI with it. There can be short- and long-term goals for your infrastructure to reduce your energy consumption for your EMS and have a tremendous yearly savings from your energy bill. With all of us having to do more with less these days, this is the first place you could start. I put together a list of ideas that you may want to apply:

Lighting. Motion sensors for bathrooms, unoccupied rooms and vending machines lights; replace LED lights and exit sign from your currents system and installing dimmer switches for areas of your buildings hallways, entranceways and offices that produce enough sunlight for safety.

Insulation. Windows, doors, pipes and water heaters.

Heating. Regulated thermostats, waste oil heaters for shops (if you don't produce enough oil, have your commonality drop their waste oil off for you to showcase your sustainable efforts).

To manage the amount of emissions we generate into the atmosphere from our equipment, Tier 1 was introduced back in 1996 for diesel engines over 50HP and in 1998 for diesel engines less than 50HP. Tier 2 and 3 were introduced in 2000-2008 with even tougher regulations. The toughest regulation was passed under the name of Tier 4 in 2004 and later was phased in around 2008 – present, with the goal of all new manufactured diesel engines to have a reduction of 90% nitric oxide and nitrogen dioxide (NOx) and particulate matter. This is costing the manufacturing companies a lot of money to be in compliance and in return we the consumers are paying for these costly changes being mandated by the government agencies.

RECYCLING

Trash. You can reduce your trash bill and save a small percentage from going with single stream recycling, if your waste removal contractor offers it. This also reduces the amount of greenhouse gas from less carbon dioxide from garbage trucks traveling to pick up waste from your facility and the methane gas generated in land fields. The only thing single stream does not allow is food or wood, but some food



Kevin Trotta



Dean Graves, CGCS, left, and Dr. Dave Minner, two of the author's mentors

waste products could serve as a nitrogen source and the wood could serve as a carbon source for making your own compost to aid in your less desirable soil profiles for your complex.

Metal. The average cost of metal these days is \$.10 a pound. I recycle all my metal and take it to the local scrap yard a few times a year and have a cookout for the crew to show appreciation and aid as a motivation tool. You can be surprised by how much scrap metal you can accumulate.

Yard waste. This type of waste can aid for your composting efforts and reduces the need to burn.

Take your entire EMS plan and add up all your ROI'S and UFC

on 1, 5 and 10-year programs with short and long term goals. The cost savings could help with extra funding an area that your facility might be currently having deficiencies in or maybe it can roll over in a budget for new equipment or capital expenses etc. With your committee try to forecast your potential savings by comparing your monthly expenses from all of your facility budgets and determining what the savings could be used for to strengthen your company's goals and objectives. ■

Kevin Mercer, LICM, CSFM, is grounds manager at Vassar College, Poughkeepsie, NY.

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Snow & ice removal: *are you up to the challenge?*

The removal of snow and ice during winter months in North America can be some of the most difficult and stressful work many of you will manage throughout the year. Challenges to this work include managing a crew or number of crews, large storms with significant snow and/or ice, fatigue from long hours, and hazardous conditions for both employees and patrons/visitors to the location. Finally, you may be asked to tackle these problems all while staying within or below budgeted constraints. Even with budget considerations, snow and ice management at your facility must be examined with the overall goal in mind; maintaining a safe environment for pedestrians and vehicles, allowing people to go about their daily lives and limiting risk for your employer.

Before going head on with a storm, a number of items should be evaluated to ensure you are making informed decisions that will work with your budget and with the desired outcomes specified above.

IN-HOUSE VS. CONTRACTED WORK

You may have already made the decision to do all the work in-house, not subbing work out to professional snow and ice management companies. Either way, there are some pros and cons by each method, and some things you should take into account:

In-House

Pros:

- More control over crews/timing of removal
- Possible cost savings, but only if your crews are properly trained

- No outsourcing of risk to a third party
- No contracts to sign with a third party
- No bidding procedures

Cons:

- You must have proper equipment, and more importantly back-up equipment in case of equipment failure
- Purchasing of de-icing or anti-icing materials must be made in advance for at least portions of the season, ensuring you do not run out mid-storm
- Implementation; you must coordinate one or more crews, ensuring you are adhering to all state and federal laws governing this type of work
- Training; you are responsible for proper training and planning for snow and ice events
- Potential of property damage that your employer will be responsible for repairing
- You will be responsible for monitoring the weather and determining the needed staff/equipment is prepared
- Added risk if safe conditions are not provided for patrons of the grounds (exposure to slip and fall claims)

Working with a contractor

Pros:

- You are hiring a specialist to do the work, so you don't need to be the expert. Questions to ask include; is the contractor a Certified Snow Professional? Are they a member of the Snow & Ice Management Association?



■ Long term may result in possible cost savings for the organization if you form a strong relationship with a solid, dependable contractor. Locking in a good contractor for a 2- or 3-year contract with defined costs will make budgeting for snow & ice much easier.

■ Risk management; if you hire and sign a contract that defines the relationship between you and the contractor, it will outline specific guidelines of who is responsible for what, meaning a certain degree of risk will be passed to the contractor. This could be a key factor in cases of slip and fall claims or property damage claims.

Cons:

■ Loss of some control

■ Hiring/bidding process can be time consuming

■ Costs can be high depending on pricing structures, amount of winter weather, etc.

■ If or when you decide to outsource all or portions of your snow removal operations to a contractor, you should always require a formal bid, a defined contract agreeable/amended by both you and the contractor, and proof of all insurances including general liability insurance.

Working through a winter storm will be one of the most difficult events you'll manage throughout the year. A large winter storm bringing significant snow or ice will result in long hours, fatigue, equipment breakdowns, and potentially hazardous situations for the people on your grounds. Add to that the desired level of service that most individuals are accustomed to in our culture, and you are faced with removing snow and ice in the most efficient and cleanly method possible in order to perform and meet your defined goals.

EQUIPMENT

Matching equipment to the work load is critical. First and foremost, you always need to be prepared for equipment failure; there is nothing worse than being stuck in the middle of a large storm and losing one or more of the tools you need to get the job done. Generally, the equipment used for snow and ice removal includes: Pick-up trucks; skid steers/compact equipment; ATV's; and front end loaders/large equipment.

The snow plow manufacturing industry has made significant advances in construction and design of plows, and now in general the following plows, along with proper techniques, can help you make your operation more efficient:

Straight Plows. When you have a straight plow, angle the blade away from the building as you make your first pass. Subsequent passes should be made away from the building and toward the outer perimeter. The general rule is to never angle your blade towards a building. The goal is to get the snow as far away from the buildings as possible.

V-Plows. Use a V-position to make an initial break through. This position is also effective for hard packed snow, ice and deep drifts. Set the blade in the straight position or angled position for general, wide path plowing or stacking. Use the scoop position for clean-up and carrying snow with minimum spillage.

Pushers/Box/Containment Plows. When using a snow pusher, be sure it's attached according to the manufacturer's specifications. These specs are designed to provide the best performance, wear tolerance and safety. A snow pusher on a loader, backhoe, skid-steer or compact utility

tractor can quickly and efficiently move large volumes of snow. Snow pushers contain snow and don't create as much of a windrow, which eliminates the need for repeated plowing of the same area to clean up spillage. By using the loader's lifting capabilities, snow pushers can be used to stack huge piles of snow. And, by removing the snow pusher attachment you're left with a loader capable of loading trucks in case the snow must be hauled away.

DE-ICING AND ANTI-ICING

Historically, snow and ice removal has been achieved with over-use of chemicals and the use of shovels, plows, and other equipment. In recent times, granular materials have become a popular and effective method for maintaining safe conditions during and after a storm. A quick review of current terminology provides a simple breakdown of the options that are currently available on the market:

De-icing is the reactive application of ice control products to driving or walking surfaces, to melt existing snow and ice. De-icing is performed after snow removal operations to melt any remaining snow and ice.

Anti-icing is the pro-active application of ice and snow melting products to driving or walking surfaces prior to a snow or ice storm. Anti-icing helps prevent snow and ice from bonding to the pavement, allowing snow and ice to be cleared more easily. When used effectively, anti-icing can create some of the safest conditions in the winter, and be a cost-effective alternative to de-icing.

Understanding the difference between anti-icing and de-icing can yield insight into the different approaches used by professional snow removal services. In general, materials used in de-icing and/or anti-icing include:

Sand: Although sand can provide some amount of traction, it technically is not a de-icing material, since sand in no way melts snow or ice. A common misperception is that sand is the best alternative for snow and ice control due to its low cost and common use. Sand may also have environmental impacts related to drainage that must be considered.

Salt: Sodium Chloride, or rock salt, is the most common de-icer in use today. Generally this product is effective, though not at all conditions. In very cold conditions (typically less than 23 degrees F), salt begins to lose its effectiveness and is either not used or is overused in an attempt to make up for reduced performance.

Sand/Salt Mix: Another common practice is to mix sand and salt together for de-icing. This method is effective in maintaining some traction, due to the sand, but it will reduce the amount of salt that can be applied to an area, so less de-icing occurs while environmental concerns and clean-up costs associated with sand rise.

There are many other products in use in today's market, and each of these differs in effectiveness, cost, availability, and environmental impact. These products include: calcium chloride; magnesium chloride; potassium chloride; urea; calcium magnesium acetate; and potassium acetate. ■

Brian Birch, CAE, is chief operating officer of the Snow & Ice Management Association. SIMA provides resources, leadership and support for snow removal and management professionals across North America. It is a non-profit trade association with a focus on training related to snow

SODDING A SEEDED VARIETY gets MLB teams up & running quickly



▲ **Busch Stadium**, home of the St. Louis Cardinals

► **Graff's Turf Farms** during the harvest of the HGT Bluegrass.

It's late November 2013 in Fort Morgan, CO and the crew at Graff's Turf Farms stands in a field of HGT Bluegrass waiting for the frost to melt away from the tips of the grass blades. Once the shiny layer of white frost, the telltale signs of morning cold, have disappeared, the crew jumps on their harvester to peel $\frac{3}{4}$ -inch of sod and soil from the sandy surface of the farm field. The 4-foot-wide strip of turf runs up a conveyor belt and rolls around and around and around, until a 75-foot-long strip of sod is tightly wound into what is known in the sod production industry as a big roll.

From there, the big rolls of turf are packaged onto a climate-controlled truck so that they won't freeze during the trek from Colorado to St. Louis, MO. A short 36



hours from harvest, the big rolls of sod arrive at Busch Stadium, home of the St. Louis Cardinals Major League Baseball team. There they are unloaded and installed as the stadium's new playing field surface. For 3 days straight, trucks make the drive from Colorado to the Midwest, and the process is repeated again.

Two days after the field is completed, St. Louis gets its first hard freeze of the winter. The fragile new sod will stay frozen until nearly March. In April, the Cardinals play their 2014 home opener against the Cincinnati Reds winning 5-3, and the grass doesn't miss a beat, performing as well as the players.

There are about a half-dozen sod farms within 30 miles of Busch Stadium. So why did Billy Findley, head groundskeeper for the Cardinals since 1998, ship sod from a farm some 800 miles away?

"The main reasons we work with Graff's Turf Farms are they're easy to work with and their growing medium is the closest to the sand here at the stadium that we can find. They grow on a very sandy soil and you need that so you don't have a layering effect or interface issue. They have a very sandy soil, they have a great product, they grow great turf," Findley says. "We'd have to truck it in from somewhere. It's hard to find the sandy soil that you need here in St. Louis."

Graff's Turf Farms also grows a new blend of bluegrass, called HGT (short for Healthy Grass Technology) that Findley was eager to have on his field. HGT Bluegrass is a bluegrass blend developed by Barenbrug USA, a turfgrass seed producer based in Oregon. The grass is licensed for sod production through Sod Solutions, out of Mount Pleasant, SC. Findley says that after he did his research, he was interested in grassing his field with HGT because of its reported resistance to summer patch disease and for its wear tolerance.

In tests conducted by the National Turfgrass Evaluation Program between 2005 and 2010, HGT was found to have the lowest incidence of summer patch and fastest coverage rates—in total earning better ratings in 16 key indicator categories—over all other bluegrass varieties tested.

"Summer patch is a disease we struggle with in St. Louis because of the warm, humid months. It's tough to find a cultivar that fights summer patch. Once you have it, you never get rid of it. You tolerate it because it's a soil-borne disease. You can't control it, but you can keep it at bay so it doesn't take over your field. The fact that the HGT was a summer patch tolerant variety was very enticing to us. Having the HGT not as susceptible to the summer patch, we still have to apply fungicides against it, but in the back of your head you know you've got something that's a little more disease tolerant," Findley says.

The grass was also rated to have increased heat tolerance and a quicker recovery from wear. The combination of those two strengths made a big difference to Findley.

"The heat tolerance in bluegrasses is fairly low. One person I heard deem HGT as a 'tropical bluegrass,' so I thought, 'That should be able to grow great in St. Louis!' Heat tolerance is very important. July and August are pretty miserable here. The nighttime temps never cool off and bluegrasses generally stay stressed. HGT's ability to stand up to the heat was great," Findley says.



▲ The back of the 4-foot harvester with two harvested rolls on the back of the machine.

"That's another benefit. You can seed right into it and not worry about any weird consolidation where it will have different patches of color," Findley says. "That's very beneficial."

Prolonged heat can also take its toll on wear recovery.

"During the hotter months, I've found that bluegrasses wouldn't recover as well. Recovery was supposed to be one of the benefits of the HGT. So in the hotter months, late June, July, and August, nighttime temps don't get that cool. Bluegrass usually uses those nighttime temps to recover from the heat of the day but they don't recover as well because we don't cool off. The HGT was supposed to recover on those warmer nighttime temps, and it's done that for us," Findley says.

With all of its benefits, Findley says the decision to plant the field with HGT was easy. Sodding, rather than seeding the field, however, was a matter of timing. Findley says it would not have been practical to try to seed his field. There just wasn't enough time at the end of the season to allow seed to germinate before winter.

"We had a late soccer match in November here after the playoffs. We'd have never had time to get the seed to come up," Findley says, "so sodding was the only way to go."

Marty Thiel is co-owner of Graff's Turf Farms. He says that the story was similar for the Detroit Tigers when they sodded their field with HGT Bluegrass last March. Thiel says Tiger's head groundskeeper Heather Nabozny, (who was unavailable for comment after having knee surgery for an injury sustained while pulling a tarp during a rain delay), had about a 10-day window in which to re-grass her field at Comerica Park following the Winter Classic hockey event held in the stadium. While the sod for the Cardinals was cut at ¾-inch thick, the sod for the Tigers was cut even thicker, at 1.5-inches, Thiel says, "for instant stability."

"The Tigers had no time to produce roots before playing time. We had to ship them a ready-to-play surface," Thiel says. "Sod cut at 1.5-inches thick added weight to hold the grass in place, and provided a stronger horizontal root structure to help with stability."

Sodding a grass that is also available as seed offered Findley unexpected benefits. In weak areas, or areas needing repair, Findley says the same grass seed can be sown into the existing turf without fear of contaminating a pristine monoculture of grass.

"Down the right side of the field, in first base foul territory, there is this half moon shade line problem during the winter months. For

4 ½ months of the year during winter, this area stays shaded and stays pretty frozen until middle of March. The first week of April is the first home stand," Findley says. Because of the shade and cold in that area, the sod struggled to establish roots. To help this one section of turf along, Findley let the turf grow up slightly longer than the rest of the field, aerated a few times, and overseeded the weak spot with more HGT Bluegrass seed.

"That's another benefit. You can seed right into it and not worry about any weird consolidation where it will have different patches of color," Findley says. "That's very beneficial."

In the areas that got enough sun over the winter and established some roots, "the left side outfield did great. Our left side position spot usually gets beat up, we have a very aggressive left fielder, and it handled it really well. We didn't have to replace left field like we normally we do," Findley says. "I absolutely would recommend HGT. I think it definitely has a place in the sports turf industry. I can't wait to see how it's going to do next year once it's had time to mature." ■

Stacie Zinn Roberts is an award-winning writer and president of What's Your Avocado?, a writing and marketing firm based in Mount Vernon, WA

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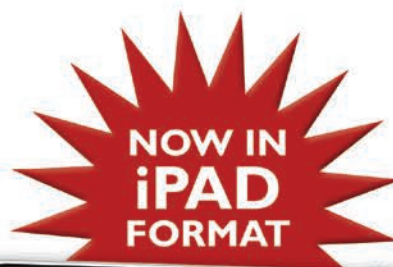
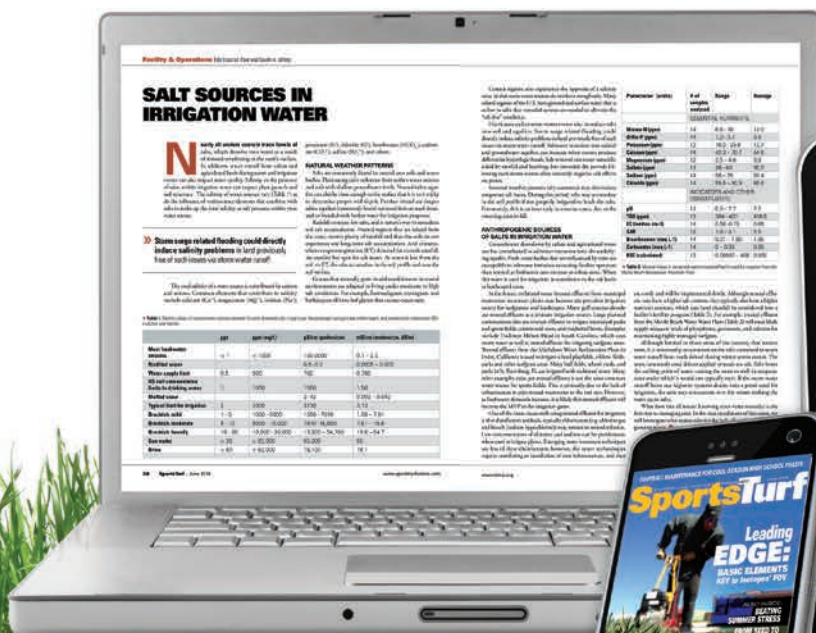
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PLANNING FOR DRAINAGE

means deciding between native soil and sand-based systems



One thing you can count on in construction of all types of fields: there will be no shortage of decisions to make. And for those who thought it would get easier after they made the big decision of natural grass vs. synthetic field—well, they’ve only scratched the surface, so to speak.

If you’ve decided upon a natural grass field, the next big decision awaiting you will be the following: should you go with a native soil field or a sand-based system?

If this is all new, here’s a quick recap: If you are building a natural grass field, there are two basic types: native soil and sand-based:

A native soil field may be a *true native field*, which uses only the soil found at the site, a *modified native soil field*, which includes the introduction of amendments such as sand, peat, compost or porous

ceramics to provide a better growing medium and/or a more stable base or a *sand cap field*, in which the top 2-6 inches (typically 2-4 inches) of soil is replaced with sand, either during construction or over time.

A sand-based system, in which the native soil is completely removed and replaced with an under drain system, a drainage media layer, principally stone and rootzone material, principally sand.

Why is this so important? In one word: drainage. Of all the decisions you will make with regard to your field, the drainage will be the most essential. The field’s ability to absorb water and move it off the playing surface is what will allow it to remain healthy and usable. Nice seating, a cool scoreboard, great concessions and locker rooms, even a fully-equipped press box and facility-wide Wi-Fi are not going to mean anything if the field is wet and muddy when game time rolls around.

“Sand-based fields, whether native or non-native, are usually always advantageous,” notes Mark Wrona of URS in Grand Rapids, MI.

The type of field chosen, native or sand-based, will depend on several factors; these include:

- The soil conditions that exist at the site
- The weather during the playing season
- How often the field will see use

While it is less expensive to go with the soil on-site, the professionals warn against making that the primary factor in determining what type of field to have.

"The first big difference between natural soil fields and sand-based fields is cost," says Dan Wright of Sports Turf Co., Inc., in Whitesburg, GA. "Drainage is the biggest issue with natural soil fields. Since there are no under-drains on a natural field, all drainage is surface drained."

This, he notes, calls for specific grading of the field.

"The goal is to get the water off the field the shortest and quickest way possible. Once the water is off the field, it must be captured and moved into some drainage swale and ultimately into a storm drain. The crown on a soccer and football field usually is at least 1.5 – 2 percent. For a baseball field, the infield should be sloped at least one percent and sloped toward the foul lines in order to get water off the infield, and the outfield should be sloped from the infield arc to the outfield fence at least 1.5% but no less than 1.25%."

The need to move water off the field, he notes, can create a maintenance nightmare, since many fields wind up being graded from the

outfield fence to the home plate drain. The long path for water to travel usually results in an unplayable field following a rain.

"Sand-based fields, whether native or non-native, are usually always advantageous," notes Mark Wrona of URS in Grand Rapids, MI. "Natural grass multi-purpose athletic fields, even those with a well-drained sand base systems and regular maintenance, should not be expected to remain in excellent condition if the number of game/events exceeds 30 per year."

Professionals will perform soil tests at the site where the field is to be constructed, and will make recommendations based on the soil content and on its ability to allow water to percolate down from the surface in a given amount of time.

Just remember, says Wrona, the professionals know what they're talking about. Two starkly contrasting scenarios come to mind as cautionary tales.

"At one school facility, a multi-field complex was built over a gravel pit, so in their wisdom, school officials allowed clay soil from the adjacent region to be dumped over their native gravel site with the thought of saving on watering costs. With a new thick clay layer spread over the native gravel, less water was required to water the field complex, but after only several events during our normally wet spring season here in Michigan, the fields would turn to mud. The situation was remedied decades later by stripping off much of the clay and mixing the remaining clay with underlying native sand and then reseeded.

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"We also worked on another project, a proposed new high school on an 80-acre open farm site with heavy clay almost everywhere. Soil borings in a depressed area of the site identified sand of various grain size diameters, perfect as a field drainage material as well as support below concrete slabs. The design team took advantage of this depressed area by removing its clay layer and excavating the sand for use creating a building pad and for use below all proposed concrete walks on this sticky clay site. This sand was also blended into the existing topsoil for all the PE/athletic fields. A separate machine was brought to the site to accomplish the blending process. The depressed area that remained was perfect as a sunken stadium with spectator seating built into the side slopes."

And if at the crux of the problem is the cost, says Wrona, there are usually various ways to address it. Narrow pipe trenching can help move water off clay fields. Generally, professionals in a specific geographical area have experience with workarounds and can let field owners know if other possibilities exist.

Balancing the needs of the owner, the needs of the athletes and the need to bring the project in on budget can be a challenge. At the same time, however, be sure to factor in maintenance costs.

"Naturally, a sand-based field, if maintained properly, will drain a lot quicker than a natural soil field and will allow play quickly after a rain event," says Dan Wright. "With a sand-based field it is imperative to maintain the field properly to ensure playability and drainage is main-

tained. A maintenance budget for a sand-based field will be more than for a natural soil field."

In addition to being less expensive to build, many native soil fields offer good water retention and can hold soil nutrients, minimizing the need for fertilization and irrigation, as compared to a sand-based field. However, as previously mentioned, they do absorb water more slowly, and can become muddy, worn and unplayable. And one day of rain can lead to more than one day's worth of delay when it comes to scheduling games, something that ultimately may wind up in costs to rent alternate field space.

So what's the answer? Listen to the professionals, get all the information you can and take every aspect into consideration when planning. There is no "perfect" field, but there is a field that is right for any given situation. ■

Mary Helen Sprecher is a free lance writer who wrote this article on behalf of the American Sports Builders Association. ASBA is a non-profit association helping designers, builders, owners, operators and users understand quality athletic field construction. ASBA offers the publication, "Sports Fields: A Construction and Maintenance Manual," which discusses, among other topics, sustainability in the construction and maintenance of synthetic fields, as well as synthetic turf recycling. For information, visit www.sportsbuilders.org.

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New flare-wing trip-edge V-plows

The new VF series flare-wing trip-edge V-plows from Hiniker feature deep-curl flared wings, providing the break-through capacity to cast deep snow farther and higher than other plow designs. Double-acting hydraulic cylinders provide positive hydraulic control of moldboard positioning, whether plowing forward or backdragging. Super-bright quad halogen headlights have up to twice the power of typical sealed beam lamps. Also available in a conventional level-top configuration, the new VF series is available in 8.5- and 9.5-foot widths. Independent high-clearance trip-edge design provides smooth operation and enhanced protection. The pinch-free pivot point is located 9 inches above ground level, for improved protection from higher obstacles such as curbs and parking barriers.

Hiniker



Macro-Sorb Technologies introduces SMS Additive Solutions

Macro-Sorb Technologies LLC has introduced its sister company, SMS Additive Solutions LLC, offering a wide variety of soil surfactants, spray adjuvants and tank-mix additives. Macro-Sorb and SMS Additive Solutions will be increasingly involved in working together to offer comprehensive product offerings to the turf industry. Backed by extensive research, SMS surfactants offer increased irrigation efficiency, less runoff, fewer localized dry spots, and resilient, playable turf. Both Macro-Sorb and SMS Additive Solutions products are available through established independent distribution channels. In addition, Seeton is expanding distribution channels for both companies throughout the country. Further product research is currently underway and new turf solutions now in the pipeline will be available in the near future.

SMS Additive Solutions



Board systems and netting

Athletica Sport Systems is the world leader in the design and manufacture of dasher board systems for indoor turf sports such as soccer and lacrosse. To support these installations we also supply and install protective netting systems, including simple vertical spectator-protection netting, motorized or walk-draw curtain systems, and horizontal netting to protect lights and ceiling fixtures. White or black nylon, monofilament, even Kevlar, all fire-rated for your peace of mind and safety. We also do UV protected, retractable outdoor baseball netting systems too.

Athletica Sport Systems



New Deere TerrainCut front mowers

John Deere increases its front mount mower models with the new 1500 Series TerrainCut Front Mowers. The series adds five new Final Tier 4 compliant models. The 1550 TerrainCut boasts a 24.2 hp engine, and the other models are equipped with 37.4 hp engines. All 1500 TerrainCut models can be equipped with a 60"/72" 7-Iron PRO side discharge deck, or 62"/72" FASTBACK rear discharge deck options. These decks come standard with flat free semi-pneumatic caster tires that increase uptime to finish the job. The 1550 and 1570 TerrainCut models are available with either two-wheel or four-wheel drive. The on-demand four-wheel drive automatically engages and disengages as needed to keep operators productive. The 1580 and 1585 TerrainCut models come standard with four-wheel drive and 2-speed transmission to provide faster transport speeds and slower operating speeds when using implements.

John Deere



Flo-Pro injection system for turf products

With an efficient, time-saving design and patented, fluid-flow technology, Flo-Pro uses a park or sports field irrigation system to apply liquid or water soluble wetting agents, fertilizers and soil amendments. Flo-Pro can also apply acid to help lower pH levels. Flo-Pro connects to the irrigation mainline and monitors precise delivery of turf care products. The unit has no moving parts and does not require electricity, which can mean less maintenance and down time. Feed rates are adjustable for various mixing ratios, and pre-mixing or pre-blending is not required. The user sets the dial to the desired injection rate from 1 to 20 gallons per hour. He then pours the wetting agent or other soluble product into the tank. The irrigation system evenly applies the solution and completes the job.

Underhill



PortaPump Junior

The PortaPump Junior is a new pump that turns your stick edger or brush cutter into a one-person pumping station. The PortaPump Junior is a centrifugal pump head with a cast metal impeller that attaches to most any shaft and can pump up 30 GPM (depending on engine size). The pump head is standard with a universal size square receptacle and can be fitted with a star receptacle if needed. The PortaPump Junior comes with a 1 1/4" discharge outlet and it can pump through 60' of hose without losing any pressure. This machine is portable and powerful and easy to interchange with other heads on any new or existing machine.

Seago International, Inc.



Bobcat Celebrates Production of ONE MILLIONTH LOADER

Producing one million Bobcat loaders is not only an unparalleled industry achievement that has impacted the livelihood of compact equipment users worldwide; it has also touched the lives of thousands more who have designed, built and backed generations of Bobcat loaders for nearly 60 years.

Bobcat Company marked this tremendous milestone with a formal ceremony on July 12, sharing the occasion with its valued employees and the community of Gwinner, N.D., home to Bobcat's primary production facility. The company also celebrated with family members of those who invented



▲ Bobcat Company and Doosan North America President Rich Goldsbury addresses the crowd at the Bobcat Company Millionth Loader Celebration.



▲ Above Left: The millionth Bobcat skid-steer loader rolls off the line and out of the Gwinner factory. Above Right: Two loaders rolled off the line during the Millionth Loader ceremony: loader number one-million, a skid-steer loader; and loader number one-million-one, a compact track loader version.



▲ Above Left: North Dakota Lt. Gov. Drew Wrigley addresses the crowd. Above Right: North Dakota U.S. Senator John Hoeven.

ALL PHOTOS PROVIDED BY BOBCAT COMPANY

the original loader, perfected the design, brought it to market and created the brand five decades ago. Past organizational leaders and hundreds of others who have been part of the Bobcat success story were also present at the event.

The ceremony was held at the Gwinner factory, and featured remarks from Rich Goldsbury, president of Bobcat and Doosan (parent company of Bobcat) for North America; Gwinner Mayor Dan McKeever; North Dakota Lt. Gov. Drew Wrigley; North Dakota Sen. John Hoeven; and North Dakota Congressman Kevin Cramer. Sylvan Melroe, one of the organization's first marketing managers, talked about the perseverance of the Melroe family, who owned Melroe Manufacturing, and built the first Bobcat loaders. He reflected upon the early days of the loader — as it transitioned from the original three-wheeled version to the skid-steer loader we know today — and how Melroe Manufacturing improved the design that became increasingly tested by challenging jobs the more the machine grew in popularity.

Cyril Keller, one of the brothers who invented the original three-wheeled loader and soon after partnered with Melroe Manufacturing, was on-hand as well.

The ceremony culminated with a product line roll-off of a Special Edition One-Millionth Bobcat Loader, which Bobcat is selling in limited quantities through authorized dealers.

“This entire celebration is about much more than a single loader, the actual millionth machine,” said Goldsbury. “It represents everything Bobcat has accomplished as an organization over six decades, and it signifies our vision for the future. We embrace and honor our history, so it was particularly special to have some of the company's pioneers and early leaders here. But we wanted to bring them together with those who are moving us forward into the new era — those who will help us build the next million loaders.”

A DAY FILLED WITH EVENTS

The general public was invited to an assortment of Bobcat-sponsored events, including a 5K run/walk in Gwinner, Bobcat factory tours, carnival-type festivities in the Gwinner Park and a “Bobcat square dance” loader performance by four brothers who have 130 years of combined service at Bobcat Company. The Association of Equipment Manufacturers (AEM) also made the Gwinner event a stop on its “I Make America” nationwide tour, which advocates for pro-manufacturing policies to create more jobs in the United States and keep the economy competitive with other countries. Attendees over the age of 18 could enter to win a 2014 Harley-Davidson Road King featuring a custom “I Make America” paint job.

“It was particularly special to host the ‘I Make America’ tour,” said Goldsbury. “Bobcat is a great manufacturing success story for

Timeline

1960 — Invented the first true skid-steer loader.



1962 — The name “Bobcat” is used for the first time on the new and improved model M-440.

1970 — The exclusive Bob-Tach mounting system is introduced, allowing fast and easy attachment changes for Bobcat loaders.

1981 — The 743 loader is introduced.



1999 — Introduced the first compact track loader with a solid-mounted undercarriage manufactured in the United States.

2009 — Launched M-Series compact loader line.



2011 — The M-Series loader models S850 and T870 became the largest and most powerful in the Bobcat lineup.



2013 — The M-Series 500 frame-size loaders replaced the popular S185 and T190. This loader size is the most popular in the world and has been for two decades.



2014 — Produced the millionth Bobcat loader.



— Information and photos provided by Bobcat Company.

so many reasons — from the generations that have been employed to the products they've produced. Thousands of Bobcat employees have given many global customers the tools they use to make a living."

Bobcat Company also helped Gwinner city officials dedicate three welcome signs at different entrances to town signifying "Home of Bobcat, one million loaders and counting."

The company celebrated the production of 500,000 loaders in 2001 and 750,000 units in conjunction with its 50th anniversary in 2008. The million loaders built by Bobcat represent the largest production of this equipment by any manufacturer globally.

AN "UNSTOPPABLE" FORCE

To commemorate the year-long celebration, Bobcat developed the "Unstoppable" campaign, which recognizes the company's rich history and heritage, yet illustrates its plans to continue to set the pace in the compact equipment markets it serves.

The celebration started in January, as Bobcat Company launched a contest that ran through June, asking participants to answer the

question, "How does Bobcat make you unstoppable?" The grand prize winner will receive a Special Edition One-Millionth Bobcat Loader. Bobcat unveiled its Special Edition One-Millionth Bobcat Loaders at the CONEXPO-CON/AGG trade show in Las Vegas in March.

Bobcat Company social media channels — Facebook, Twitter, LinkedIn, Google Plus, Flickr and YouTube — feature various elements of the celebration and Unstoppable content and promotions. Fans and followers can participate in merchandise giveaways and trivia contests, show pride by selecting a "pride badge," share stories and read about how others are joining in the celebration. A special app enables customers to upload photos, and apply a custom "One Million Strong" treatment. Several celebration-focused videos are available as well.

"The ceremony in Gwinner is a great centerpiece to what we are doing to celebrate all year," Goldsbury said. "But it doesn't start or end with this. 'Unstoppable' is a theme that started in January, and we still have a lot of celebration time left in 2014 and beyond." ■

Information provided by Bobcat Company.



▲ **Left:** Pictured are descendants of the Melroe and Dahl families. The Melroe and Dahl families helped the original Melroe Manufacturing Company produce, market and brand the original Bobcat loader. Sylvan Melroe (pictured in the blue shirt, far right, first row) was one of the company's original advertising managers. **Middle:** Bobcat Company and Doosan North America President Rich Goldsbury and Cy Keller, one of the inventors of the original loader. **Right:** Bobcat Company and the City of Gwinner, North Dakota dedicated three signs at entrances to town; they signify that Gwinner is "Home of Bobcat, one million loaders and counting."

The loader that launched an industry

The Million Loader celebration honors the revolutionary three-wheeled loader engineered by brothers Cyril and Louis Keller of Rothsay, Minn., designed to clean turkey manure out of barns. Second-generation Melroe Manufacturing Company leaders — sons of founder Edward Gideon "E.G." Melroe — Clifford, Lester, Roger and Irving Melroe; and their brother-in-law Eugene Dahl saw strong potential for the machine to meet the needs of any livestock farmer.

In 1958, the Gwinner-based manufacturer bought the rights to this innovative three-

wheeled loader, and Louis and Cyril Keller became employees of the Melroe Manufacturing Company, assigned to put the loader into production.

The Keller Loader, as the original machine was called, was improved with a larger 9-horsepower engine, and a new product line for the Melroe Company was born — the M-60, a three-wheeled Melroe self-propelled loader. It was the forerunner of what became the Bobcat skid-steer loader, and ultimately launched the compact equipment industry.

Then, in 1960, the company built the first

true skid-steer loader with four-wheel drive. In 1962, the loaders were branded "Bobcat" after the "tough, quick and agile" prairie animal.

Today, the Bobcat name still matches the performance qualities of the enduring international brand. Bobcat Company has become North Dakota's largest manufacturer with more than 2,000 employees in the state. Bobcat products have representation through more than 900 dealers in more than 100 countries with production facilities in Gwinner, Bismarck and Wahpeton, N.D.; Litchfield, Minn.; France and the Czech Republic.

Membership Application

SportsTurf MANAGERS ASSOCIATION

Experts on the Field, Partners in the Game.

Fax to: (785) 843-2977

Or mail with payment to:
Sports Turf
Managers Association
P.O. Box 414029
Kansas City, MO 64141

Name	Title		
Employer/ Facility			
<input type="checkbox"/> Business <input type="checkbox"/> Home			
Address			
City		State	Zip
Home phone	Work	Cell	
Fax	Email		
Signature			
Direct Supervisor Name			

New Members*

As a new members, you receive a FREE conference registration, value \$375, to be used within 3 years! Just indicate your status on the conference registration form.

Did someone refer you to STMA? We would like to thank them, and reward them with an STMA \$100 voucher.

Person who referred you:

Facility name:

*Not been an STMA national member since 2000. New student and affiliate memberships do not qualify for the free conference registration. However, all members are eligible to receive the \$100 voucher for referring a new qualifying member.

Membership Category:

- | | |
|---|-------|
| <input type="checkbox"/> Sports Turf Manager | \$110 |
| <input type="checkbox"/> Sports Turf Manager Associate* (Additional member(s) from the same facility) | \$75 |

Please select the primary facility type where you are employed:

- ☐ Professional Sports ☐ Higher Education ☐ Schools K-12 ☐ Parks and Recreation

- | | |
|--|----------|
| <input type="checkbox"/> Academic | \$95 |
| <input type="checkbox"/> Student (verification of enrollment) | \$25 |
| <input type="checkbox"/> Commercial | \$295 |
| <input type="checkbox"/> Commercial Associate* (Additional member(s) from the same commercial company) | \$75 |
| <input type="checkbox"/> Affiliate (Person who is indirectly or on a part-time basis, involved in the maintenance/management of sports fields) | \$50 |
| <input type="checkbox"/> Retired | \$50 |
| <input type="checkbox"/> Chapter Dues (contact headquarters for amount) | |
| Chapter name) _____ | \$ _____ |

☐ Contribution To SAFE Foundation (research, education and scholarship): \$ _____

Total Amount Enclosed: \$ _____

Payment Method:

☐ Check ☐ Money Order ☐ Purchase Order #: _____

Credit Card: ☐ Mastercard ☐ Visa ☐ American Express ☐ Discover

Name on Card _____

Card #: _____ Exp. Date: _____

Signature: _____

*There must already be a national sports turf member from your facility or commercial member from your company before you may sign up in the Associate category.

Phone: 800-323-3875

www.STMA.org

THE STEWARD SCHOOL BASEBALL FIELD

Richmond, VA

■ **Category of Submission:** Schools/Parks Baseball
■ **Sports Turf Manager:** Mark Roberts
■ **Title:** Athletic Turf and Field Manager
■ **Education:** Bachelors Degree in Agriculture from Ferrum College
■ **Experience:** 1998-01: Luck Stone Fielder's Choice Infield Mix; 2002-06: Turf Products (Sports Turf only) Herod Seeds; 2006-09: Innovative Turf

Applications and Consulting (ITAC) — athletic fields maintenance and building; 2010-Present: Turf Manager of 11 acres of athletic fields at The Steward School.

■ **Full-time staff:** Roberts is only full-timer
■ **Part-time staff:** The varsity baseball team, head baseball coach Bruce Secrest, and assistant to the athletic director Garrett Compton.
■ **Original construction:** 2010

■ **Rootzone:** Native soil
■ **Turfgrass variety:** Patriot Bermudagrass
■ **Overseed:** I overseed with a three-way blend of perennial ryegrass called Field General Maxx from Landscape Supply Inc., and it is applied twice during the fall. The first application in mid-September at a rate of 250 lbs/acre; the second application is in late October at a rate of 200lbs/acre.
■ **Drainage:** No drainage system

WHY STMA SHOULD CONSIDER YOUR FIELD A WINNER?

From 2000 until 2010, I worked in sports turf sales and then as a sports turf contractor, covering the majority of the state of Virginia, viewing baseball fields from the Division I college level to parks & recreation fields. With the exception of Division I fields, most fields had a recurring theme. The small details, such as lips building in the grass, edging, and holes in the batters boxes and catching area were being missed; even in fields that were at the higher high school division levels, I found that the small every day details were being neglected.

When I joined The Steward School in 2010 as the athletic turf and field manager and we built the new baseball field, I focused on teaching and instilling the "art" of turf management to the varsity baseball team. I have focused on helping them become aware of the "little details" that make such a huge impact on the outcome of successful turf management. Thus, emphasizing the pride in dedication and "ownership" of their field and why we do what we do. I am al-



ways humbled by and have such a feeling of pride in not only myself, but those players who truly have come to understand the concept of what we do, in their comments on the consistency and play-ability of our field compared to others that they have played on. With our team playing high level travel ball,

they are on a lot of fields across many different states. Players compare our fields to Division I schools, like the University of Virginia and the University of South Carolina. Not to mention, the alumni who are now collegiate players return from college and comment that our field is nicer than most fields at their level of play. In conversation with Billy Wagner, head coach of the Miller School and former MLB player), he commented, "If you want a true playing surface, nicely groomed, major league-style park, Steward is the place."

In addition to working with players at practice, we have a program in which sophomores and juniors participate in a 1-week internship. For the past 2 years, I have had the opportunity to have one of the baseball players intern with me. This allows me to teach, discuss, and enlighten them to all of the aspects involved in the field of sports turf management and hopefully instill that desire in them. At the end of the week, I receive the same response: "There's a lot more to this than just mowing the grass." Yes, there most definitely is.



Equipment list

- Sand Pro with nail drag, mat drag, and drum roller
- Toro 5500-D Reelmaster for mowing
- Toro Greens Master 1600 for infield mowing
- Toro 3200 Workman for moving tarps and tools
- WonderEdger for field edging
- Northern Industrial tamper for mound and bullpens
- Toro MultiPro 5500 Sprayer for spraying ryegrass
- Kubota L2500 Tractor with a Lely 3pt. hitch spreader
- Prize lawn BF #300 Series Walk Behind spreader for spreading seed.
- Toro Edger

Why should our field win Field of the Year? Other than the fact that we have been truly blessed with a beautiful facility and a true playing surface, I have been given the opportunity to teach the art of grounds keeping to students who otherwise would not be exposed to all of the aspects involved in the profession, thus helping to ensure the future of the "art" of sports turf management.

SportsTurf: What channels of communication do you use to reach coaches, administrators, and users of your facility? Any tips for communicating well?

Roberts: I make my rounds every morning visiting with the director of athletics as well as all of the coaches that are in season. If there is an issue with a field, face to face is the best way to communicate that. I find email messages are sometimes misinterpreted or misunderstood. I feel that face to face takes that out of the equation, leaving little chance for error. I believe that an important part of being a good turf manager is having open communication and developing good relationships with your coaches. Email has its place and works well for outside user groups, but I still try to make time to speak with those contacts face to face, or at least by phone. I usually reserve email as a back-up for closed field notifications. I guess I am just "old school!"

ST: What are your specific responsibilities? What is your favorite task? Least favorite?

Roberts: My title is Athletic Field and Turf Manager. I manage and maintain 11 acres of bermudagrass, which consists of three rectangular fields and a baseball field. I have full responsibility for all of these fields, both agronomically and their playability. Our athletic facilities manager, Garrett Compton, and I work very closely on the rectangles. Garrett does most of the painting of the fields as well as game setup. I help with this when time allows. On the flip side, I do everything on the baseball field, and Garrett helps me when his time allows. In both spring and fall, we can have anywhere from two to five games a day. With only two of us, things can be a bit crazy at times. I could not do this without him! We also have a great administration team in our director of athletics and our coaches. They trust my judgment and adhere to my call of closing a field due to the weather and playability issues.

I find game days most enjoyable, especially baseball in late April when the ryegrass is striping nicely. It is quite a thrill to see op-

posing teams that visit our facilities for the first time. We are blessed with a very nice field, and some of the teams are more than impressed by what we have.

My least favorite task is a tie between canceling games and edging. I hate to cancel games due to bad weather that we experienced prior to game day, not at game time. I pride myself on getting games in when other teams have to cancel. (Did I mention we do not have an infield tarp?) Edging is very time consuming and a lot of work for a one-man crew, but the results are great, so it's worth it.

ST: How did you get your start in turf management? What was your first job?

Roberts: I received a General Agriculture degree in college and was working for a local co-op when Luck Stone, a Virginia-based, crushed stone producer, created a topsoil division. I was brought on as their salesman for this division. It didn't take long before we were mixing high quality infield mix, which is what brought me to the sports turf industry in the late 90s. From there, I went on to work as a salesman for a turf products supplier. The best part of that job was that I continued to work with the same athletic directors and coaches that I already knew. In 2006, Rodney Hopkins, (a friend and a customer) started up a company, ITAC (Innovative Turf Applications and Consulting). I was asked to join him to perform sales and hands-on turf maintenance, making ITAC my first true sports turf position. In 2010, I moved on to The Steward School. It's been a learning experience to get here, and I am very appreciative of those who mentored me along the way.

ST: What practices do you use to keep your infield skin in peak condition?

Roberts: The biggest challenge for the skinned area is getting the teams on the field in early February. In Virginia we can have freezing and frost until early April, as well as rain and snow. I spend a lot of my time drying dirt. I use a lot of Turface and a 500-pound roller. I add two tons of Turface (I like the Heritage Red) to the top of my skin in late January or early February and nail drag it into the top half inch. I continue to add Turface as needed throughout the season. I also roll the infield at least once a day in early season. I always keep the infield tight; it helps hard rains to sheet off and gets us back on the field sooner. I also add 20 tons of infield mix and have my skin laser graded every August. After a particularly tough weather

season, especially like the one we had in the spring of 2014, it really helps get things back in shape.

ST: What changes if any are you considering or implementing for the winning field in 2014?

Roberts: The Lord blessed our baseball program this past year. Along with Field of the Year, our baseball team won the state championship for our division. With that, our baseball parents and sports boosters (The Spartan Club) are providing us with a new logo-covered windscreen that will enclose the field and add to the overall aesthetics. I am also painting our school logo behind home plate and plan to do more for the upcoming season. I am field testing a new high clay infield mix for Luck Stone. It has only been down for a week at this point, but I am very excited about what I have seen so far. I constantly strive to add new things and tweak old ones. I do not ever want to become complacent.

ST: How do you see the Sports Turf Manager's job changing in the future?

Roberts: I feel we need to be advocates for our industry. It is our responsibility to let anyone who will listen know what we do and how technical and challenging a job it truly is. Educating the public should be ongoing. We need to stay on the cutting edge and not be afraid to try new techniques. I hosted the VSTMA Field Day in June and had fraze mowing demos done in the outfield. It was great for the industry to see. I have been monitoring it all summer and tweeting pictures. I can't wait to do the entire field next summer. I also feel we need to implement as many green practices as possible. We live in a time when everyone is more environmentally conscious, so staying on the front end of that is good for our industry.

I would also like to add that no one wins one of these awards alone. I would like to thank my wife, Sherry, and my sons, Wyatt and Jack, for understanding why Dad is at the ball field so much. I would also like to thank Bruce Secrest, Steward's head baseball coach and my friend. I could not keep this field this nice without him and his team's help and co-operation. I am a truly blessed man to be able to do what I love every day! ■

STMA would like to thank Carolina Green, Ewing, Hunter Industries and World Class Athletic Surfaces for their continued support of the Field of the Year Awards Program.

October brings open registration, brochures, deadlines & more!

October 1 saw the opening of online registration for STMA's 2015 Conference in Denver, CO. The event takes place January 13-16, 2015 and features hours of educational content you won't find anywhere else, including opportunities to get CEU credit from a wide variety of affiliate associations. CEUs will be available through ASBA, GCSAA, IA, NIAAA, NRPA, PGMS, and PLANET. Pesticide recertification credits will only be available for Colorado.

Also featured at STMA's annual conference are the trade show, featuring more than 160 companies with the latest technologies and contacts, as well as receptions, an awards banquet, silent/live auctions, career resources, networking opportunities and more.

Also, the hard copy conference brochure was mailed out to thousands of STMA members and non-members in late September. As mentioned in the brochure, this year STMA is moving to a largely all-digital registration process. All members are requested to register for the conference at stma.org unless your employer requires a hard copy for purchase order (PO) or other administrative purposes; a hard copy registration form will be made available online to those who require it.

STMA looks forward to seeing you in Denver January 13-16, 2015! ■

It's a Perfect Time to Take Advantage of STMA's New Member Promotion!

Join STMA as a new member* and get conference registration free. If you are not an STMA national member, you are eligible to receive a free conference registration to be used within three (3) years of joining STMA! This is an excellent way to experience conference education, peer-to-peer networking and access to the latest technology – the top three reasons members join STMA. Go online at www.stma.org for more information. Be sure to note if someone referred you so they get recognized.

**Must not have been a national member since 2000. Academic, affiliate and student memberships are not eligible.*

Become an STMA Member and raise your game

The knowledge, skills, abilities and best practices members encounter by networking with other professionals in the association only enhances their organizations. Additionally, STMA's advocacy with groups such as athletic directors, parks and recreation directors, coaches, and parents reduces risk for the facility by providing safer playing surfaces.

Time and again, the knowledge and skills unique to STMA and its members have benefitted facilities—and their bottom lines—nationwide. Some examples:

Field Safety. One of STMA's chief mandates is ensuring members are well-versed in field safety: from professional stadiums to school districts, the association has members and educational resources standing ready to ensure your athletes are playing at the top of their game on the best fields possible. Our resources cover every type of field for virtually every sport.

Risk Management. By ensuring you have an STMA member on-staff well-versed in safety issues, you are likely to see your insurance premiums lowered, including liability insurance. Proactively protecting your assets with a sports turf manager is key.

Environmental Stewardship. Are your grounds crew members versed in proper environmental management techniques inclusive of waste reduction strategies, LEED certification, and pesticide run-off mitigation? STMA members possess a wealth of knowledge on these best practices to protect your players and the environment.

Industry-wide Best Practices. As the recognized association leader in the sports turf industry for more than 30 years, STMA provides members valuable tools and resources to save them time and money. Members can easily tap into a nationwide network of managers who readily share their best practices and advice.

Don't have an STMA member on staff? STMA offers a free job posting service for employers. Simply send the position description or ad to stmainfo@stma.org and it will be posted for the association's 2,600+ members to see.

Improve your value through certification

STMA offers its members the opportunity to take their professionalism, and their value to their facilities, to the next level with the Certified Sports Field Manager (CSFM) certification program. The CSFM program focuses on increased accountability for sports turf managers, as well as a dedication to cost effective facility management and field safety. The examination for certification covers four major areas of sports field management:

- Agronomics
- Pest Management
- Administration
- Sports Specific Field Management

"I'm sure most sports facilities are like our company, and receive dozens of résumés for positions. Those who are certified rise to the

top of the stack at Sodexho because those sports turf managers send the message that they are willing to go that extra step. You know that they will bring great value to the job.”

John Fik, CSFM, Grounds and Sports Fields Consultant, Sodexho Education Services, Vermontville, NY

What are some benefits to becoming a CSFM?

Benefits for members:

- Recognition of achievement
- Increased earnings potential
- Commitment to excellence

- Increased educational opportunities

Benefits for Employers:

- Increased professionalism for facilities
- Commitment to excellence
- Acknowledged accountability
- Dedication to cost effective facility management
- Commitment to field safety

Learn more about how STMA members can raise their game by becoming a CSFM and how you can support their efforts to become certified at stma.org. ■

STMA, Buffalo Communications Continue to Expand Social Media Reach



#FIFA commissioned survey of players shows 77% are in favor of natural grass. <http://sports.yahoo.com/news/attorneys-ask-support-world-cup-201440339--sow.html> ... #SportsTurf

Is artificial turf more expensive to manage than natural grass?

#SportsTurf http://www.ccenterdispatch.com/opinion/article_f36e8394-379f-11e4-8d0f-0017a43b2370.html ...

How one facility collects #water: <http://bit.ly/1pI1Nc8> . #SportsTurf

STMA member Jeff Salmond & his crew live for fall #football Saturdays. @NewsOK article: <http://bit.ly/1tYGDxO> . #SportsTurf @OU_Athletics

. @ColoradoRapids Phil McQuade reviews the #WorldCup's natural grass fields. <http://bit.ly/1tYHSG8> @fog_sports #SportsTurf @CSTMA_TURF



DOC'S DUGOUT

This photo comes from the Rose Bowl in 1985. This is before we had the availability of using thick cut sod and at the time, there was no such thing as large rolls either. Sod was harvested in traditional squares or rectangles. Worn areas like centers of fields were re-sodded using these small squares and a lot of prayer! Heavy organic or clay types of soil were best for short-term use because you could play on it after a week or two with good weather; however the heavy soil gave us lots of problems if rain occurred.

Bowl the Night Away with SAFE!

This year the **SAFE Board of Trustees** is holding their annual event with a little twist. Leave your golf clubs at home because this year the SAFE Foundation presents "A Night of Bowling" at the 2015 STMA conference in place of its annual golf tournament.

The Night of Bowling begins 6 pm Tuesday, January 13, and will include bowling, assorted games, prizes and more. Accompanied by cocktails and a custom menu, this will be a night you won't want to miss. Whether you're competitive or not, guests will have free range to form teams or bowl individually. We encourage guests to have some fun with it and form teams based on chapter, state, category or any other combination! There will be prizes for top team and individual bowler.

The event will take place at Elitch Lanes, which is a short drive from the Hyatt Regency. Continuous shuttle service will be provided from the hotel to the event.

Also, multiple sponsorship options exist for this unique event. Chapters might consider purchasing a sponsorship package to assist SAFE in its mission and help future sports field managers as they

pursue their educational goals. Sponsor opportunities include:

Night of Entertainment Title Sponsorship \$4,000 – Available

Exclusive naming rights to provided for this inaugural event. Package customizable to company's preferences. Logo placement, signage, press release mentions, lane signage all included.

Lane Sponsorship \$350 – Available

Signage included at lanes. Great idea for chapters to sponsor different lanes!

Drink Ticket Sponsorship \$500 – Claimed

Logo and small amount of information printed on drink tickets

Contact Shant Thomas at stthomas@stma.org or 800-323-3875 for more information or to sign up to be a sponsor. ■

STMA Affiliated Chapters Contact Information

Sports Turf Managers Association of Arizona: www.azstma.org

Colorado Sports Turf Managers Association: www.cstma.org

Florida #1 Chapter (South):
305-235-5101 (Bruce Bates) or
Tom Curran CTomSell@aol.com

Florida #2 Chapter (North): 850-580-4026,
John Mascaro, john@turf-tec.com

Florida #3 Chapter (Central): 407-518-2347,
Scott Grace, scott@sundome.org

Gateway Chapter Sports Turf Managers Association: www.gatewaystma.org

Georgia Sports Turf Managers Association: www.gstma.org

Greater L.A. Basin Chapter of the Sports Turf Managers Association:
<http://irmstma.blogspot.com/>

Illinois Chapter STMA: www.ILSTMA.org

Intermountain Chapter of the Sports Turf Managers Association:
<http://irmstma.blogspot.com/>

Indiana - Contact Clayton Dame, Claytondame@hotmail.com or Brian Bornino, bornino@purdue.edu or Contact Joey Stevenson, jstevenson@indyindians.com

Iowa Sports Turf Managers Association: www.iowaturfgrass.org

Kentucky Sports Turf Managers Association: www.kystma.org

Keystone Athletic Field Managers Org. (KAFMO/STMA): www.kafmo.org

Michigan Sports Turf Managers Association (MiSTMA): www.mistma.org

Minnesota Park and Sports Turf Managers Association: www.mpstma.org

MO-KAN Sports Turf Managers Association: www.mokanstma.com

New England STMA (NESTMA): www.nestma.org

Sports Field Managers Association of New Jersey: www.sfmanj.org

Sports Turf Managers of New York: www.stmonny.org

North Carolina Chapter of STMA: www.ncsportsturf.org

Northern California STMA: www.norcalstma.org

Ohio Sports Turf Managers Association (OSTMA): www.ostma.org

Oklahoma Chapter STMA: 405-744-5729;
Contact: Dr. Justin Moss okstma@gmail.com

Oregon STMA Chapter:
www.oregonsportsturfmanagers.org
oregonstma@gmail.com

Ozarks STMA: www.ozarksstma.org

Pacific Northwest Sports Turf Managers Association: www.pnwstma.org

Southern California Chapter: www.socalstma.com

South Carolina Chapter of STMA: www.scstma.org

Tennessee Valley Sports Turf Managers Association (TVSTMA): www.tvstma.com

Texas Sports Turf Managers Association: www.txstma.org

Virginia Sports Turf Managers Association: www.vstma.org

Wisconsin Sports Turf Managers Association: www.wstma.org

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H ☐ Other (please specify) _____

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4 Yearly operating expenditures (excluding salaries)

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Q&A with Dr. David Minner

Professor, Iowa State University

Questions? Send them to David Minner at Iowa State University, 106 Horticulture Hall, Ames, IA 50011 or email dminner@iastate.edu. Or, send your question to Grady Miller at North Carolina State University, Box 7620, Raleigh, NC 27695-7620, or email emailgrady_miller@ncsu.edu.

'Tis the Season

My football and soccer coaches have asked me to determine which sport causes the most damage to the field they share in hopes that the athletic director will "kick one to the curb." Football argues that the field was fine until a spring soccer program started and soccer argues that their cleats are shorter and large divots are seldom removed like they are in football.

— You'll never get my name
Kentucky bluegrass Country

I do know who sent me this question and after a laugh we agreed to just answer the question like this. Most AD's I know would not kick either team to the curb since they realize the benefit that all competitive sports play in high school life. The net result from this type of dispute usually pushes an AD to replace natural grass with synthetic turf so that the problem of complaining coaches simply goes away; in fact, I suggest that in the past 10 years a major reason AD's have replaced grass fields with rubber infill fields has been to stop the complaining and make the problem associated with poor playing conditions simply go away.

other while digging those cleats dig deeper into my face. Thus, fall traffic thins out existing plants and additionally keeps new shoots from forming.

Even worse, right in the middle of the season frost sets in and my leaf blades no longer grow in length. By the end of the fall football season I'm ripped open in the middle with bare soil exposed. Even though the kindly sports turf manager tries to patch me up at season's end with a sprinkling of seed and dressing of sand, I will lay cold and dormant without an ounce of recovery until spring. Bless you if you cover me up and extend my growing season. If left alone, short days and

main point is that most cool-season grass football fields can recover by the following football season, if they are given reasonable care and are allowed to recover in the spring and summer.

Unfortunately, spring soccer starts in April just at the time when bluegrass plants are again starting their natural push for recovery through tiller production. Even though the nature of the traffic is less (less divoting with shorter cleats) it occurs at a time when new tillers will be damaged and when it is too cool for grass blades to outgrow the pace of treading. With both sports, about half of their seasons occur on grass that is growing very slowly. In fairness to the round ballers, if soccer alone were played from April through May with no football season, those fields would easily repair themselves with moderate care and a resting period during the summer and fall.

Another form of seasonal grass repair occurs when rhizomes begin to form in early summer. Spreading rhizomes grow underground during the summer filling in areas where grass has been thinned. Limiting irrigation during a summer recovery period will greatly reduce spread of rhizomes into areas void of turf, especially if summer dormancy is allowed to occur. Fall football, spring soccer, and summer turf dormancy is a formula for complete and utter failure of high school athletic fields. I'm not saying which sport causes more turf damage; just realize that "To everything there is a season, and a time to every purpose under the heaven": love, war, football, soccer, rhizomes, tillers, traffic. Now go figure it out and share it with somebody when you do. ■

» This may sound a little crazy but sometimes I picture myself laying on my back as if **I were a field looking up at all the commotion occurring right on top of me.**

Whatever their reason I want to shed a little more light on how playing season and growing season impact turf injury from too much traffic. This may sound a little crazy but sometimes I picture myself laying on my back as if I were a field looking up at all the commotion occurring right on top of me. As long shanks start the football season near the beginning of September, shorter days and cooler temperatures are just starting to make my Kentucky bluegrass rhizomes turn toward the sky forming terminal shoots. This natural period of turf thickening is blindsided by fall football's bigger, heavier, longer-cleated players that just seem to mill around in the center of the field pushing and shoving on each

warming temperatures of spring again cause me to produce new tillers that help close the scars from autumn long cleats chasing the oblong orb.

Let us pause here and restate the obvious: a high school football field will usually recover from the traffic associated with a normal 10-game season provided there is a sufficient recovery period with no play in the spring and summer. Some sports turf managers are able to recover fields with 50 game fall schedules provided the fields are rested in the spring and summer. There are several extenuating factors such as muddy games, pest damage, and extra non-football activities that can cause field decline, but the



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