IN THIS ISSUE: The art of topdressing

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FROM THE SIDELINES

Football memories



Eric Schroder / Editorial Director / Eschroder@epqmediallc.com / 763-383-4458

WE EMAILED SOME READERS and asked about their favorite football memory, as a fan, player, turf manager, parent, etc.

"Tve been blessed with many wins as a player and coach, but my best memory was sharing, with an otherwise winless team, a victory over an undefeated team. I'll never forget the respect from those young men despite my feeling of failing them. A Gatorade drench was never so sweet." -Bryan Hopkins, PhD, Brigham Young University

"I'm a big college football fan more than pro but my fondest memory was playing little league football in our hometown. We had two teams, the Red Devils and Blue Angels. I played for the Blue Angels and became the kicker when coach saw me messing around one day and nobody else could come close [to kicking that far]. Those were some enjoyable times without a worry in the world except to be able to make a good kick." -Bruce Suddeth, University of South Carolina Upstate

"Fortunately, I have had the opportunity to be a part of all aspects of the game of football. From being a collegiate player, to becoming sports field manager at my alma mater, to experiencing games as a fan, there is nothing more rewarding than going to a facility and seeing a field perform well throughout the competition. Watching the game is great, too!"-Scott Stevens, CSFM, MBA, Elon University

"Favorite memory as a fan, definitely when the Patriots won the Super Bowl in 2001. As a turf manager, when the opposing team asked if my field was synthetic when it was natural grass."—Ben Polimer, Weston, MA

"My favorite football memory is when I was the sports turf manager at Bowling Green University. BG was playing Northern Illinois and ESPN's College Game Day was coming to town. Kirk Herbstreit walked down on the field and thought the natural grass field was FieldTurf. Other people told him that it was natural grass. That's the nicest compliment I have ever had."-*Jeff Haag, Xavier University*

"NAAC is the home stadium for six high schools, so we keep the field neutral through the season. However, if one of our teams hosts a State semi-final, we get to paint logos and make the field theirs for that one game. My favorite thing is hearing the players' excitement when they see the field personalized for their team." -Sun Roesslein, CSFM, Jeffco Athletics

STMA dues amount correction

In the September issue on page 46 we published the STMA dues amounts by category and mistakenly switched Affiliate and Commercial in our table. The correct new dues amounts are:

Sports Turf Manager	\$ 130	Commercial	\$ 340
Sports Turf Manager Associate	\$ 85	Commercial Associate	\$ 85
Academic	\$ 110	Student	\$ 30
Affiliate	\$ 60	Retired	\$ 60

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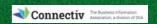
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PRESIDENT'S MESSAGE

Light in the darkness



Tim Van LOO / CSFM / STMA President / vanlooti@iastate.edu / @cycloneturf

OCTOBER – MY FAVORITE MONTH! College football, cool temperatures, and chasing whitetails in the woods with my bow are just a few reasons why October is my favorite month. It is also the final stretch for our growing season in the north. This is a time to take an account of what worked, what did not, and how to improve for next year. When I think I have things figured out, something else always happens to remind me that I do not!

I titled this message "Light in the darkness" because as I write our country is experiencing major natural disasters with hurricanes, floods, and fires. I hate to see people when all hope is gone and when the "cards on the table" just do not seem to be a "winning hand." It is at these moments when something truly special happens. That one person finds a way to be the beacon of light for the others around them. That one person will do something

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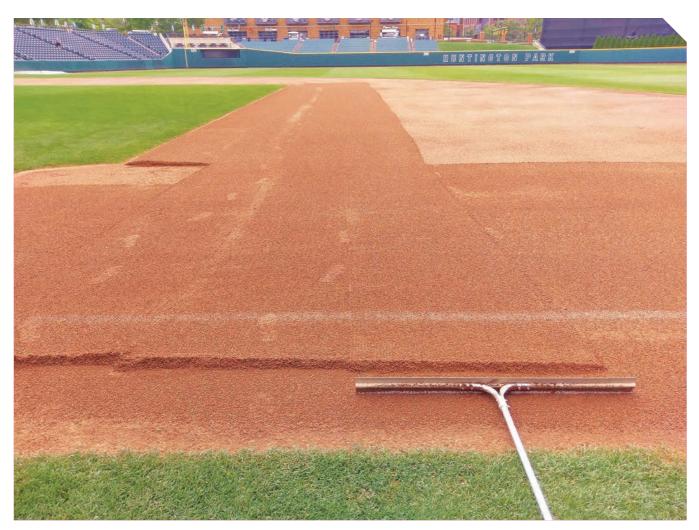
small for another person, something that moves past indifference, politics, or race and flows into something so great. The smallest of gestures seem bigger in the hard moments and can completely change the situation for people in need.

I am in Iowa, in the busiest time of the year for my work. What can I possibly do to help someone in Houston, Florida, or Montana? I would love to be able to serve those in need in those places, but that is not what I am able to do in this moment.

I can, however, be the light right where I am. I often reflect on the impact I have on those around me. I can quickly see myself for the selfish person that I am; it is a hard truth of which I believe most of us are guilty. To be the "light in the darkness" takes complete unselfishness, something that is impossible in this world. We all have tough times; we also all have people who affect us for the better in those tough times. Let us be a people who influence those around us, a people who put our own selfishness aside to help those around us. We should be listeners, helping hands, or life rafts whenever the opportunities are in front of us.

The STMA is a place that gives me great hope in our industry. It is an industry full of people willing to be selfless for the greater good for people around them. These many "everyday heroes" shy away from the bright lights and serve their families, community, and work places. I encourage each of you to be the "light in the darkness" for those around you. We do not have to be heroic to be a hero. We simply need to see the people around us and offer help when they need it. Enjoy the rest of your fall season and do not hesitate to contact STMA headquarters or me if there is anything you need. /\$1/

@cycloneturf



MOISTURE MANAGEMENT TO IMPROVE YOUR INFIELD

// By WES GANOBCIK

It is almost impossible to describe proper moisture management without going into great depth on the many considerations made regarding every aspect for infield mix management. This will be a description of how we approach the infield over a 24-48 hour period of time.

Leading up to a home stand, we are working toward proper moisture at least 2 days in advance. The preference is to maintain good moisture at all times, but some situations call for the clay to dry out. At our facility, we have two dirt zones in

our irrigation system, one on the inside edge and one along the back arc. Several times over those two days leading up to a home stand, we will run the dirt zones for 15-25 minutes at a time and "flood" the infield. To flood the infield, we irrigate to a point where there is standing water on the surface of the material. We allow that water to soak in, and then go through the process again. A depth of 3 inches is what we are maintaining and trying to create proper moisture within.

We will use our 1-inch hose to supplement areas that the irrigation doesn't

get as evenly while the team is on the road. All watering is done by hand with the hose on game days. At our facility, we use well water and our pump gives us 90-100 PSI.

A big factor that must be taken into consideration is whether or not the clay was allowed to dry out before reintroducing moisture. If the infield was able to dry out and become dusty, much more care must be taken when watering because the dirt will then become soft and muddy until rolled tight again. If moisture was maintained within the material, it is much easier to get back

to proper game moisture. The retained moisture should keep the infield much tighter and firmer, keeping the integrity under foot or machine.

Weather dependent

Depending on weather, we will then get the infield skin "game ready" either the day before a home stand or on the morning the home stand starts. My goal is for the infield to be at full saturation and the conditioner on the surface to be at a point of just beginning to dry.

My first step is to use either an aluminum lute rake or 7-foot broom to "flip" the conditioner. This is as simple a process as going over the infield very lightly with one of those tools in order to get the conditioner to sit up on the surface and not be compacted down into the dirt from watering. The goal is to get to a point where the conditioner is dry on the surface, but the infield skin is still at full saturation underneath.



That process may take two or three passes with a combination of those tools. After the initial pass of flipping the conditioner, I will often make a second pass in a different direction. The goal of that is to create as smooth of a



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surface as possible with the conditioner and eliminate any ridges from previous dragging or play. It is also at this point that we will sometimes "clean" the conditioner. When cleaning the conditioner, I will start at one edge and pull the lute rake very lightly across to the opposite edge. By doing this, the majority of sunflower seed shells, grass clippings, or any other debris should pull off the surface to a pile at the edge that can be scooped and discarded.

Once we have the conditioner as smooth as possible and have attained optimal moisture, we will roll the infield skin with our 1.5-ton roller. This is done to compact and tighten the infield as much as possible, as well as to "lock" that moisture into the top 3 inches. We will almost never use the vibratory function on the roller, as I've found that to create layering that will lead to eventual chipping when played upon. It also tends to allow

that surface layer to dry out more quickly and separate from the clay below. I will sometimes also see this if the infield is rolled two different directions. My experience has shown that a single pass over the entire infield creates the best result. We are also very careful to come to an extremely slow stop every single time the roller comes to an edge of the grass. If you are going too fast and come to an abrupt stop, you will push a little bit of infield material. This will begin to create a lip and lead to the chance of bad hops at your transition points.

Right before rolling

The reason we want the conditioner dry while rolling is so that material does not stick to the drums of the roller. But it is important that the skin has good moisture when rolling to achieve the desired compaction. Rolling dry infield material will not accomplish your goal and may

even fracture the surface, leaving it even looser than before.

Once the infield has been completely rolled, we will start the nail dragging process. We have two nail drags; one that attaches to our infield groomer and is controlled hydraulically, the other tows behind and is wider, but allows us a little less control of pressure.

As long as our infield hasn't gotten too damaged from an event or play, we are careful to nail drag at only a very shallow depth. We don't allow the nails to go more than ¼ inch into the surface. This will loosen the conditioner up which was rolled into the infield skin and will just barely scratch the surface to eliminate any ball marks or cleat marks that may exist. We will nail drag in one, two, or three directions based upon how damaged the infield was.

Once we have finished nail dragging, we will let that loosened material dry enough so that any clumps will break down when

metal dragging it and the drag will not become clogged with wet material. We will typically make one pass with the stiff metal drag by hand rather than dragging with the groomer immediately so that it doesn't compress loose material in tire tracks.

We'll then use a stiff metal drag with a weight on top to drag two to three directions. This will completely break down any clumps worked up while nail dragging. It should also create an absolutely smooth surface on the infield.

After using the stiff metal drag on the groomer, we will then come back in with either the aluminum lute rake or the stiff metal drag and pull conditioner as evenly as possible. This will once again eliminate any ridges left behind by the drag on the groomer. If there are areas where the conditioner is thin, it is at this point that we will add more conditioner to achieve our desired amount.

I tend to go with a slightly thinner layer of conditioner than many



groundskeepers, still giving the player slight contact with the infield dirt without having it 100% covered.

This year, we have transitioned into having 100% of our infield conditioner being red professional ProSlide. There



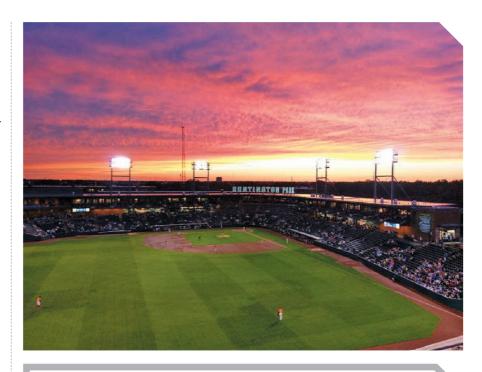
are numerous reasons I chose to go that route, but the biggest and most important was durability. We roll our infield almost daily and are aggressive with maintenance practices to create that smooth surface. Through all of that, I've seen almost no structural degradation of the particles. Not only has this created an easier environment for maintenance, it has also saved us significantly from a financial standpoint.

Checking the numbers

Once we have the attained the desired surface with the conditioner, it is time to begin adding water again. [We] take a great deal of factors into consideration, many weather related. I will constantly be checking humidity and dew point levels. The higher those two are, the slower the clay will dry out, and the less water I'll want to add as we approach play. I also have to consider wind speed, cloud coverage, and temperature. Each of those three factors will also weigh heavily into how quickly the material will dry. Obviously, we need to take rain into consideration, as well.

Beyond that, the schedule of field use will come into play. Each night after a game, I will visit both our home and visiting managers. I inquire about whether or not there were any issues during batting practice or the game that day. I will also acquire a detailed schedule of exactly what each team plans to do for batting practice and additional early work on the field the next day. This will help me know exactly when I need the infield to be at a point to be played upon.

At our level of professional baseball, a significant number of infielders will not wear cleats during batting practice. This is huge in retaining the integrity of the surface through practice into the start of the game. I try to express this philosophy to teams at all levels that use our field, but it often goes in one ear and out the other. I also have a great appreciation for infielders that wear metal cleats rather than molded cleats. The metal cleats go in and out of the surface cleanly like knives and create almost no damage. The molded cleats, on the other hand, tend to be more like shovels and dig out small chunks with



FOR A STANDARD GAME STARTING AT 7:05, OUR VISITING TEAM WILL FINISH BATTING PRACTICE AT 6:00 AND FINISH INFIELD AT 6:10. THIS GIVES US APPROXIMATELY 35-40 MINUTES TO BREAK DOWN BATTING PRACTICE AND DO ALL OF OUR GAME PREP. DURING THAT TIME, WE WILL ONCE AGAIN GROOM THE INFIELD AND ADD MORE WATER.

every step. With proper moisture, this is minimized, but regardless, molded cleats leave more of an impact than metal cleats.

To me, proper moisture for playability is as follows. The surface is firm and you leave no footprints when walking. However, I can press my knife at least 1 inch into the surface and pull it back out cleanly. The conditioner is wet to slow the drying process, as well as to create a darker contrast for the infielders to see the ball.

For a standard game starting at 7:05, our visiting team will finish batting practice at 6:00 and finish infield at 6:10. This gives us approximately 35-40 minutes to break down batting practice and do all of our game prep. During that time, we will once again groom the infield and add more water.

Following each game, I will continue to factor in each of those weather conditions and the upcoming forecast, as well as the next day's schedule, both for the professional teams as well as any other events occurring during the day. But most evenings, I will put the infield under standing water after we have given the infield a quick post-game drag, starting the process all over again the next morning.

Wes Ganobcik is head groundskeeper at Huntington Park for the Columbus (OH) Clippers. This piece first appeared on the DuraEdge.com blog, thanks to them for allowing us to reprint here. /ST/

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THE ART OF TOPDRESSING

// By ADAM THOMS, PHD AND NICK CHRISTIANS, PHD

opdressing is the process of applying a thin layer of sand, soil, or some other finely granulated material such as compost to the surface of an established turf area. While topdressing has generally been practiced on golf course greens to provide the best putting surface, it can be a useful practice on sports fields as well.

Topdressing can be an effective way of improving the turf surface, but it is very difficult to do properly. In fact, it is done wrong far more often than it is done right. The biggest problem with topdressing is forming layers in the soil that act as barriers to grass rooting (Figure 1). Once these layers are formed, they can be nearly impossible to remedy, short of reconstruction.

The proper application of topdressing has many positive benefits. It can reduce an existing thatch layer or prevent thatch from building up. Thatch is broken down by microbial activity. For microbes to work on thatch, there has to be enough moisture and oxygen in the layer. Topdressing opens the layer up to moisture and air movement and contributes microbes to the process. It is one of the most effective ways of controlling thatch. Additions of a very light topdressing of sand during the season can help manage the slick layer that forms on the playing field surface. This can be especially useful in overseeded bermudagrass athletic fields, where a slick layer can develop near the soil surface.

Topdressing is a great way to smooth the surface for sports turf managers who want a more uniform playing surface. Sometimes the soil on which the original turf area was constructed is just not suitable. Clay soils make a terrible media for managing sports fields. The addition of a coarser particle's over the more finely textured particle can help to improve water infiltration and playability during periods of high moisture. It is possible to build up a new rootzone of sand with topdressing, but it has to be done right. Finally, topdressing can be used to cover seed or stolons, or to fill in spaces between sod rolls. It can be a very effective way of growing-in a new turf area.

Rules

There are some basic rules to follow when developing a topdressing program. Generally, choose a topdressing that matches the underlying media. This assumes, of course, that the underlying media is suitable for growing grass. If the field is sand-based, or sand-capped and the drainage is good, try to match the sandy media of the field. Never seal off the field with a layer of fine material, particularly a clay based soil or a smaller, particle-size sand (Figure 2). Layering of fine particles over a coarser material can result in a "perched" water table and water will not drain from the fine material into the coarser layer unless the layer of fines is saturated. This will prevent rooting into the coarser layer.



Figure 1. Buried sand layer can form a barrier to rooting.

Some fields with a history of poor topdressing practices can develop a series of layers of fine and coarser material one on top of another. Solving this problem may require reconstruction. If the field is soil based and drainage is good, it would not be wrong to use a soil of similar texture to that in the field.

If the media in the exiting field is unsuitable and the plan is to build up a new sand layer on top of it, be sure to have physical tests performed on the proposed media before the process begins. Also, make sure the sand is not rounded and has good gradation of sizes. First, it is important to have suitable surface drainage. If there is a

HERE IS THE MOST IMPORTANT RULE OF TOPDRESSING: ONCE YOU BEGIN, YOU CAN NEVER STOP. ONE OF THE MOST COMMON ERRORS IN TOPDRESSING IS TO START AND STOP AND THEN START AGAIN.

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Figure 2. Layering in a sports field. This is a picture of a soil profile from a professional stadium in the US showing the layers that can develop over time. The green material is green sand, it is capped with a clay-loam soil, followed by a sand layer, then there is a black layer probably due to anaerobic activity, and the beginning of a sand cap. Reconstruction would likely be necessary on this field. Used by permission of Dan Strey.

problem with the grade and standing water in low areas occurs, this process will not work. Some sands work and others do not. Make sure that you start with the right sand and that the sand will be available for many years to come.

Here is the most important rule of topdressing: once you begin, you can never stop. One of the most common errors in topdressing is to start and stop and then start again. This will result in layers that form a barrier to the roots and will cause more harm than good.

Once it has been decided that topdressing is going to be used and the proper material has been chosen, it is critical that the right amount of topdressing is applied per application and that the interval between applications is proper (Figure 3). Applying too much topdressing at a time can result in the burying of an existing thatch layer, which results in a layer of organic matter that acts as a barrier to root growth later. Applying too little at intervals that are excessively long will result in a series of thin layers that again form barriers to rooting.

There are no set rules for how much and how often. It depends on the conditions in the field and is based on the experience of the field manager and observations made of the profile during the process. There is no substitute for an experienced sports field manager who can stay with the process over a number of years. If there is a thick thatch layer, light applications of 1/8 inch or less every few weeks would be appropriate until the thatch layer has broken down. Combining this with core aeration is also a good idea. Be careful not to bury the thatch layer, it has to be broken down slowly to avoid layers. If the field is new and has a sand base, applications of 1/8 to 1/4 inches of topdressing per application, a few times per season should be sufficient. Monitor the sand build up by cutting profiles in the field on a regular basis to observe the build-up of sand.

If there is not a thick thatch layer and the plan is to establish a new rooting media over time, heavier applications can be made more often. Usually the goal will be to build up at least 4 inches of



Figure 3. Improper intervals between topdressing applications can result in a barrier to root growth.

new rooting media on top of the existing soil. Applications of 1/4 inch per application, four times or more per season can be used, but again monitor the process to prevent layering.

Those who have inherited fields with layering due to improper construction or poor topdressing practices will wonder what to do about the problem. Sometimes the problem is so bad that reconstruction is the only solution. More minor problems can usually be improved by core aeration and topdressing. Choose the new material properly, fill aerification holes with the new topdressing and begin to build up a new layer that is connected to the topdressing holes (Figure 4).

Sealing these sand filled holes with a finer material is a bad mistake. It is important to build up a uniform layer of topdressing with the sand-filled holes extending to the new topdressing layer. Again, once the process has begun, you can never quit. A common problem occurs when one sports field manager begins a good, well thought-out program and then leaves for another job. If the new manager begins a totally different program or stops topdressing, the results will not be good. This of course happens all the time and we usually see the results after it is too late.

Topdressing after installing new sod is also a great practice to follow. It will help the seams of the sod grow together quicker, and prevent damage on the sod edges from being exposed to the elements. Ideally the topdressing material, sod rootzone, and existing rootzone will all match, or try to get these to be as close as possible.

Recycling sand study

In one of the studies at Iowa State University, we are looking at is how much sand can we reuse by recycling aerification cores without lowering the performance capabilities of sand-based rootzones. The Wiedenmann Core Recycler has demonstrated the ability to separate the organic matter from a hollow tine core from the sand particles in that core (Figure 5). This means the sand that is in the core that would typically be swept up if the entire core is removed is now returned to the field, and the organic matter can still be removed from the rootzone.

Typically, around 40% of the sand from the core is returned, which can be a real savings to the topdressing budget. Some organic matter is also returned with the sand particles, but early

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ANSWER ON PAGE 37

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Figure 4. This picture shows a good transition for topdressing and aerification holes



Figure 6. The Imants ShockWave can be used to incorporate some topdressing sand into the rootzone while causing minimal amount of disruption to the playing surface.

results have demonstrated it is such a small amount that it hasn't impacted water infiltration or changed the rootzone organic matter to any degree.

Many athletic field managers will use solid tine aerification with a light topdressing several times during the playing season to help maintain the playing surface. Some athletic field managers will perform solid tine aerification weekly during the season, or every time the field has a couple days of downtime. The key is balancing being aggressive enough with solid tine aerification, while not being over aggressive and ruining the stability of the field. Also keep in mind not to open the rootzone up to the elements right before a major change in temperatures, as you will do more harm than good.

Incorporating topdressing sand into the rootzone is typically done only with solid- or hollow-tine aerification; however there are a couple of other machines that have demonstrated some success



Figure 5. The Wiedenmann Core Recycler separating the organic matter and sand from hollow tine cores on athletic field turf.



Figure 7. Topdressing can help dilute the paint layers left behind in the rootzone after painting field logo's each year. Along with aerification and topdressing water will continue to infiltrate into these areas.

for athletic field managers. One is the DryJect, which uses a blast of water to create an aeration hole, which is immediately filled with sand supplied from a hopper on the machine. DryJect has a Maximus nozzle to allow for a larger aeration hole than traditionally used on golf greens, which will allow for more sand incorporation. Keep in mind this machine uses a blast of water to incorporate the sand, so the field may have higher soil moisture levels for a day or two after treatment.

Another device that can be used is the Imants ShockWave. which will cut slits into the field, going perpendicular directions will create channels for the sand to fall into when topdressing (Figure 6). This device creates very little surface damage and could be used during the season to help with topdressing incorporation.

SOME ATHLETIC FIELD MANAGERS WILL
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THE KEY IS BALANCING BEING AGGRESSIVE
ENOUGH WITH SOLID TINE AERIFICATION,
WHILE NOT BEING OVER AGGRESSIVE AND
RUINING THE STABILITY OF THE FIELD.

We are currently conducting studies to investigating how many times during the growing season this device can be used without sacrificing performance of the field. The study is also investigating how much sand topdressing can be incorporated.

Some athletic field managers will use colored sand for topdressing, especially during the season to help it blend in better with the playing surface. The most important key with using a colored sand is that the particle size will still match what is in the rootzone. Many colored sands are made up of smaller particle sizes than traditional topdressing sand, and this causes the field to close off for drainage with time and repeated use of the smaller sand. Also, keep in mind that the colored sand is much more expensive than traditional sand, making one ask if the color is worth the cost?

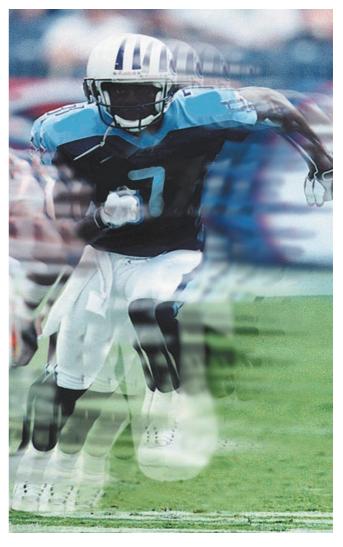
Topdressing can also dilute out the paint layer left from a logo or yard line markings on a field. These layers can build up very quickly over time in the rootzone, especially in a stadium setting where the field can't be shifted to move the painting around from one year to the next (Figure 7). Regular topdressing can help dilute these layers out and allow proper water infiltration to continue.

Proper topdressing rates and timing can improve the performance of any athletic field as long a few simple practices are kept in mind. First, once you start never stop. Second, try to topdress with a product that will improve your drainage and not jeopardize stability.

Finally, know your rates and don't apply too much sand topdressing to bury the turfgrass and cause harm on the playing surface, this is especially true during the season. When done correctly topdressing can improve the performance of an athletic field for use in all weather conditions. /57/

Adam Thoms, PhD, is assistant professor and extension specialist for turfgrass at Iowa State University; Nick Christians, PhD, is University professor of turfgrass management, in Ames.

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Mike Hebrard on painting logos

Editor's note: Mike Hebrard, owner of Athletic Field Design, Clackamas, OR is a well-known source of wisdom in the sports turf industry, especially for his hands-on knowledge about field preparation and presentation. Here is some advice about painting logos from Mike:

schools from painting logos of text in their end zones due to the low angle seats and how many fans can't see past the 20-yard lines, which makes the text difficult to read. I always recommend spending your time and money on the 50-yard line, as that is where most of the seats are. But with the advent of branding and lots more drone use, there is an increasing need to give

fields more distinction as many schools' identities evolve.

At first it might seem to be a big challenge for a few grounds staff to do the extra work in painting end zones. But with a couple of simple layout techniques and specialized tools, painting end zones can be fun and create a self-worth. Depending on how much text is used for school or mascot name I usually go with 15-foot high letters. A couple of reasons why: if you have soccer, whether the logo is going to be inlaid or painted, I recommend that you measure from the inside of the 10yard line back 54 feet to create an end line in the end zone. This will allow for the 18foot deep goal box to be almost centered in the end zone and allow for 15-feet high text to be unobstructed by the box, with a little interference from the width of the goal and penalty box. Strategic spacing of letters might actually help avoid them, too. I start by running strings at the top and bottom of the letters and marking the center, (80 feet from inside of sideline). I try and keep the letters simple and bold but the painter that likes challenges might want to slant or use a more unconventional font. To create a slant, start one tape ahead or behind the other starting spot and use the same method. You can print out a basic font and copy it onto a flash drive and take it to your local office supply store and they can print it to a larger scale and laminate it. If you can manipulate PowerPoint you can draw the grid and



copy it to a group and import image. When it is printed the grid will be exactly an inch so I use an engineer ruler to convert to whatever distance that would fit. I find the total length of my text then center, and I start my tapes at the bottom and top, then use pin line spray chalk to mark the start and stops for each letter.

I also will add other strings across for the letters that have an extra horizontal line to line up. Another trick I use is a series of 2-inch square tubing that slides in together make for longer addition. Then by lining up the sides of the letter I use a long extension on my aerosol holder and zip down the tube creating a straight line. It is best if you can have a helper on each end to quickly move to the next mark, of course! I also have developed a rolling disc that attaches to an airless extension and can quickly slide it along the tube speeding up the layout process. I also lay down bender boards on the end of the letter giving me a

crisp edge without overspray. I usually edge all the letters first, the fill them in. You can also to this method and paint the outline first they use a contrasting color to fill in.

One letter I have had problems with free handing is S, but going back to my old high school geometry (which I didn't learn from but rather a sign paint painter) was the eclipse formula. By intersecting two mid-way you can lay out the top and bottom of the S then freehand where they intersect, thus creating a very accurate letter. If for some reason your spacing doesn't come out balance you can always add a star or related image to make it look like you intended for that look!

Dreaded typos

Typos have been a recurring event for me as there is always someone that wants to stop by and chat during the layout process, thus causing me to lose focus and skip a letter! Remember the old Snickers commercial — "the Chefs"? To clean a mistake, if the paint is from liquid bulk quickly get the water on it and lightly scrub out the color! But most likely you had full confidence in yourself and used inverted aerosol cans that won't remove with water. Everyone says to use green paint, but I have yet to see one that can match the particular color of grass you are working with.

If the mistake isn't too big I use a sod repair tool much like a cup cutter and go to an area away from the field and cut plugs and replace them in the misprinted area. In a pinch you can even throw grass clippings over the area as well. And if that person comes around while you're painting you might want to threaten to paint a white outline around them! This method can also be use for text on the field promoting an event. If not too big and you need to have other ones or use for next year, do the same process on a poly tarp with eyelets and cut out the half moons. /\$T/



THREE OFTEN OVERLOOKED BENEFITS TO OVERSEEDING

// By BRYAN OSTLUND & GRADY MILLER, PHD

Everyone, from fan to player to coach, can appreciate a vibrant green playing field. There is no doubt about the visual benefit that overseeding a playing field can bring. However, as a sports turf manager, appearance isn't the only factor to consider when weighing the options for a green field year-round. Overseeding can generate additional benefits associated with turf health, field playability and turf protection, all of which can play into the turf management and maintenance decision.

Overseeding allows warm-season turf to appear green year-round. While warm-weather turf will go dormant when temperatures drop, a cool-season grass – such as ryegrass – will flourish. If you're not already overseeding your

warm-season playing field, consider these three distinct benefits that go beyond appearance when making the call this fall:

Turf health

By maintaining turf that actively grows throughout the cool season, like ryegrass, turf managers introduce a grass that acts as a protective barrier. Active growth holds up better than dormant grass, minimizing wear and tear that can lead to brown or bare patches.

The rise in paint applications has created new opportunities to achieve a green playing field despite dormant turfgrass, but offers only marginal improvement in wear tolerance (via encouraging growth later in the fall and earlier in the spring). Too much traffic

without any overseeding protection that allows turf to grow actively and recuperate can result in field failure. By overseeding with perennial ryegrass, turf managers can achieve a lush green look year-round, while guarding against high-traffic wear and tear that could otherwise result in significant repairs or even the need for replacement come spring.

Field playability

Actively growing grass provides a more dynamic, softer playing surface that's better and safer for sports than a dry, dormant field. For regions that see heat fluctuations even in the winter, a field with actively growing turf offers a natural cooling effect, making it more comfortable for players. Additionally,

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routine overseeding can result in a more dense, uniform and safe playing surface that provides increased stability for players. In some cases, an overseeded field may be more consistent for ball roll than a field with warm-season grass, such as bermudagrass, during dormancy.

Turf protection

Overseeding with ryegrass in the fall may aid in kick starting your bermudagrass in the spring. In the same way that heavy traffic can impact a dormant playing field in the fall, excessive wear can also slow the regrowth of dormant bermudagrass in the spring. Worn dormant grass introduces bare ground that is more subject to wear and erosion and increases the incidence of weeds.

If overseeding is an option that sounds right for your field and conditions, start planning now for the best approach in your region. Several factors will need to be taken into consideration, including the timing of seeding, coverage, variety and methods.

First, timing for overseeding is relative to conditions and region. Contact your local agriculture university extension office for specific seeding advice in your region. In the Deep South, general guidelines lean toward overseeding for football in early October and baseball in the late winter or early spring. However, in a transition zone area overseeding for baseball must also take place in the fall, as it is too cool for establishment in late winter to early spring, which would likely result in a stand failure.

During the fall, it is common for cool-season grass to come in at a more controlled rate, which allows it to be more tolerant of wear and disease. If you are expecting a lot of wear and tear, be generous with your seed distribution. And although overseeding may be influenced by the sport, it's best to use climatic conditions as the determinant of when to seed.

Next, determining whether to apply all cool-season seed at once or to do so gradually is a personal choice. If you decide to overseed all at once, make sure it is the ideal temperature and you will have the best opportunity for a lush, even turf. Some field managers prefer to trickle in seed. This is more of



a conservative approach that may result in germination issues and often doesn't allow much time for correction before the germination period ends. A nice alternative is to seed 75% at once, and then hold back the rest to trickle in as needed to fill bare or worn areas.

In terms of selecting a variety, perennial ryegrass seed works best for overseeding warm-season playing surfaces. Talk with your local extension office to identify a seed that has tested well in your area and be open to change.

Seed has come a long way. If one doesn't work well, don't be afraid to change it up and try a new variety recommended by local experts.

Finally, there are some tips to successfully overseeding. For instance, make sure seed is distributed as evenly as possible, and don't try to do it by hand. Use equipment that distributes evenly and in opposite directions. Additionally, when using last year's seed, make sure your seed has been stored in a cold storage or airconditioned space. If you must use old seed, mix it with new seed to increase

the likelihood for success. Seed you have been holding on to for multiple years may not germinate.

Everyone loves a lush, green playing field, but overseeding is a smart choice that extends beyond looks. Perennial grasses can improve the overall health and durability of your field, while providing athletes with a more stable surface for play. Consider these critical benefits as playing seasons are upon us and fans, coaches and players alike look to you for a safe and attractive playing field.

Bryan Ostlund is Administrator, Grass Seed USA, and Dr. Grady Miller is Professor of Crop Science at North Carolina State University. Grass Seed USA is a national coalition of grass seed farmers and academic turf specialists with a wealth of experience in studying, growing and harvesting grass and grass seed. The coalition seeks to inform and educate residential and commercial customers about the benefits of grass and best practices for responsibly growing and maintaining healthy turf. For more information, visit www. weseedamerica.com or follow @WeSeedAmerica on Facebook and Twitter.



THE BENEFITS OF MICRO-TRENCHING

// By PAT WILLIAMS

Editor's note: Pat Williams is operations manager for Performance Sports Fields, Inc., Lee's Summit, MO.

ome field managers make the case that proper field drainage is second in overall importance when managing a sports field, second to proper mowing but ahead of irrigation. They may be right, but whether it is second, third, or even fourth on the list, you shouldn't overlook it. There is an affordable service for new or existing fields, micro-trenching. It has many unforeseen benefits and is worth considering.

What is it?

Sometimes referred to as a "sand slit drainage system," micro-trenching has been around for several decades and has begun generating a new, and growing interest. On a full-sized soccer field it is over 17 miles of narrow sand filled trenches that are usually installed at a 45-degree angle to the prevailing slope. This gets the excess water off the surface and into the trenches as quickly as possible. Trenches can be cut into your new or existing field to enhance drainage (native soil, sand modified, sand capped, or a sand-based field that has sealed over with organic matter). Micro-trenches can be used with or without sub-base drains but a well-designed and installed sub-surface drainage system can greatly enhance the performance of micro-trenches.

Sub drains are expensive and may not be required for your situation. On existing fields, micro-trenches should be installed first and if experience demonstrates that faster drainage is desired the sub surface drains can be added later. The addition of the sub drains will not damage the micro trenches. If you are building a brand-new field or there is a highwater table to contend with, it would be best to install the sub drains at the same time as the micro-trenching.

How does it work?

Seems simple enough but understanding how the knives slicing the trench interacts with the soil profile is vital to understanding the hidden underlying benefits of microtrenches. Our machine has six sets of long knives that are positioned 10 inches apart along a slowly rotating shaft. The shaft rotates in the direction that the machine is traveling, cutting six slits at the same time.

MICRO-TRENCHING

- Installs quickly with no messy clean up to keep you off your field.
- Installation can be done directly over existing irrigation
- Gets excess water off the field faster
- Drains puddles and low-lying areas.
- Lets you get on the field faster after a rain event.
- Creates trenches that can store up to 11,000 gallons of water to be absorbed into your fields slowly over time.
- Provides an avenue for air, water, and nutrients to permeate into your field.
- Gives the turf deeper root penetration and increased root mass for a more robust turf.
- Gives you more durable fields that hold up better under stress and recover faster.
- Provides compaction relief.

Each knife is positioned on the shaft so that only one penetrates the ground at a time. The way they enter the ground sets up a wave action, a back and forth motion of the soil between the blades across the entire width of the machine.

The "rhythmic wave action" in the soil is important to the underlying benefit of the micro-trenching process, but the real action happens on the back side of the rotation when the knives begin to rotate up and out

of the soil. The entire 10-ich thick section of soil between the knives is being rocked back-and-forth, lifted up, stretched and pulled which loosens and fractures the entire soil profile as the knives exit the ground. We have found that the surface of a field rises approximately 1 inch after micro-trenching. This type of decompaction is referred to as "vertical linear de-compaction." The complete soil profile is "fragmented" bot vertically and horizontally.

LEE'S SUMMIT AMPHITHEATER

Lee's Summit's Amphitheater was micro trenched in the spring of 2017. This year was a good year to see how the micro trenching worked with the large amounts of rainfall we had throughout the summer. All the runoff for this site drains to the bottom



of the amphitheater and would pool up. We have one main drain line that was installed during the construction of the amphitheater, but the compaction was so bad that the water was not moving through the soil to get to the drain. The Micro-Trenching allowed for the water to leach through the soil to the main drain. This site would have been in standing water after a three-inch rain, but now. within a few hours after the rain stops it is free of standing water. I was impressed with how well it worked."-Andy Carr, Legacy Park Supervisor, Lee's Summit, Missouri Parks and Recreation Department



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ON THE FIELD



The second part of this process is when the slits are spread open and immediately filled with sand, creating a trench. Directly behind the rotating knives is a wedge-shaped stationary dagger that is positioned to line up inside each of the slits. This wedge is approximately 1 inch wide and acts to hold the slit open enough that sand can be automatically shaken by the machine into the trench. The sand holds the soil in place preventing the fractures and loosened soil from returning to their previous state of compaction and prevents the trench from closing. A local field manager recently reported to a group of his peers that he documented 2 inches more root growth after micro-trenching his highly compacted soccer field.

Micro-trenching de-compacts the soil, holds water, yet allows excess water to flow off the field and allows play on the field to begin sooner. It allows imperfections in the slope of the field to drain and allows slow draining fields to drain faster.

Technology details

Smaller particles, like silt and clay, have greater relative surface when compared to the large sand particles in the trench. This gives the silt and clay a stronger capillary attraction to the water than the larger sand particles. Water that is held by the relatively large sand in the trenches begins to be pulled vertically and horizontally into the finer sand, silt and clay particles

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"We had one of our two soccer fields, and one of our three baseball fields micro-trenched about 10 years ago. Today the fields that were treated outperform the others in turf growth and earlier green up even though they all receive approximately the same treatments." William Liming, Wamego Kansas Parks & Recreation Supervisor

that compose the surrounding soil structure of a native soil field.

Calculations on our sand indicate that approximately 11,000 gallons of water is stored in the nearly 17 linear miles of micro-trenches installed on one full-size soccer field. This represents about ¼ inch of excess rain or irrigation water that the field will capture and hold in the trenches, slowly releasing it into the field. This is water that could have been lost.

During a heavy rain, excess water begins to flow down the slope of the field. It is quickly intercepted and begins to fill the trenches. Once filled the water begins to move in two distinct ways.

First, as long as it continues to rain, the trenches will carry excess water off the field. Shortly after the rain stops water will stop entering the trenches. Once this happens the flow down the trench essentially ends and the water is held in the course sand of the trenches by capillary action.

Second, is an unforeseen underlying benefit that begins when the water is drawn into the field by capillary action, when a liquid has an attraction to particles (sand, silt, and clay) and wants to wrap itself around them. Water wants to stay wrapped around a particle, until it is knocked off by a droplet of excess water or drawn

towards another particle. At this point the sand trench is holding onto the water that is beginning to infiltrate the field. Soil surrounding the trench contains smaller particles of sand, silt, and clay, which have a stronger capillary attraction pulling the stored water out of the relatively large sand particles of the trench. Water will be passed from particle to particle into the rootzone, much like dominoes fall.

Field drainage is so important because water that runs off a field is lost; it is wasted, and worse yet may be loaded with nutrients that may never penetrate your rootzone. Micro-trenching is a great opportunity to put this water to use, solve slow drainage problems, drain puddles, and make your irrigation system more efficient.

It is recommended that most fields be redone every 5 years to maintain optimum water and air inflow as well as provide extensive decompaction. If you performed this service six times during the lifespan of your field you will have placed 700-800 tons of sand that can be blended into the soil and used as a good start for your next field, or you may decide that the field is performing well and a light renovation and replacement of the irrigation system is all that is needed. /\$T/

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THE SPORTSTURF INTERVIEW: MICHAEL BURAS, CSFM

his month in "The SportsTurf Interview," we meet Michael Buras, CSFM, Grounds Director for Longwood Cricket Club, Chestnut Hill, MA. Buras received the Sports Turf Managers Association Dick Ericson Founder Award in 2015, for raising the level of professionalism in the sports turf industry, and won the 2008 STMA Field of the Year for Sporting Grounds. He is a 1997 graduate of the University of Massachusetts-Amherst turf program.

SportsTurf: Do they still play cricket at Longwood Cricket Club? What's the history of the club?

Buras: Longwood was founded as a cricket club in 1877. They had some excellent teams that competed against top teams throughout the Northeast. The first head groundsman was also the captain of the cricket team. In 1878, the club added its first lawn tennis court. From there the club transitioned to all tennis, with no major cricket matches after 1930. As one of the world's oldest tennis clubs, many prominent tennis tournaments were at Longwood. The National Doubles, Davis Cup and U.S. Pro brought some of the greatest tennis champions of the day to the club, from the eras of Tilden and Budge to McEnroe and Sampras.

ST: Are there clay and hardcourt tennis surfaces as well as grass? What else do you maintain?

Buras: Longwood has 25 grass and 19 clay tennis courts. In 2005, the club removed a 7,500-seat tennis stadium with the club's only hard courts. This allowed for the construction of six more clay courts. The clay courts are like a baseball infield skin. Maintaining the grass courts is like managing a combined sports field and golf green. There is intense traffic in a small area on low cut grass. The crew specializes in turfgrass and manages many gardens and trees on the property.

S7: What keeps you busy during winter?



Longwood Cricket Club, Chestnut Hill, MA

Buras: Winter often seems busier than the tennis season of April 15 through November 5. Capital projects, hiring, continuing education and professional turfgrass associations keeps me occupied. Grass court managers meet every other winter for specialized education and networking. The New England Regional Turfgrass conference hosts the seminar in Providence, RI. Attendees come from the United States and abroad to share their expertise.

S7: I read where you are a part of a UMass turf research project. What can you tell us about that?

Buras: Research on lowcut (.312") turfgrass is being conducted at UMass. Professors Scott Ebdon and Michelle DeCosta are studying wear tolerance of various species. These include Kentucky bluegrass, perennial ryegrass, fine fescues, velvet, creeping and colonial bentgrasses. They built three grass tennis courts at the Joseph Troll Research Center. Heavy play on these courts is making conditions for measurable wear. This is the

first grass tennis research in the United States. A grant from the New England Regional Turfgrass Foundation made this possible. The results will assist anyone managing short cut, cool season grass.

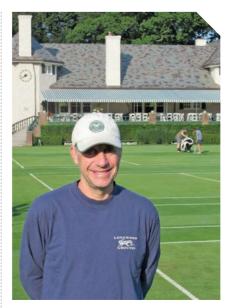
S7: What are the most important things to do to keep grass tennis courts in great shape?

Buras: Care of a grass tennis court is like the care of a top sports field. The lower cut of the tennis court grass does introduce extra challenges. The biggest is water management. Damp grass is not safe for play. Dry soil allows for better ball bounce. Keeping the surface dry while maintaining plant health is always a fine balance. Grass court soils are generally somewhere between a sandy loam and a clay loam. We strive for compaction to have good ball bounce. Thatch also affects ball bounce. Too much and the courts are soft, too little and the courts wear out faster. Again, balance is necessary to maintain quality playing conditions while keeping healthy grass. Most tennis foot traffic is in a confined area

and this presents a wear challenge on the court baselines. That is why continuing education is so important. The goal each year is to have less wear, better consistency and firm courts. The level of athlete is improving and expectations are always increasing. The staff embraces new ideas and technology to keep up with this. Assistant superintendents Nathan Salmore and Charlie Bartlett have lots of grass court experience. But they are always striving to improve the courts.

S7: How do you work around any product restrictions due to laws or budget?

Buras: The main restriction we have is time. Longwood has 1,200 members, a full tournament schedule and many special events. Finding time to fit in maintenance can be a challenge. This is where the experience of Longwood's dedicated, professional grounds crew is essential. They know when to close courts for maintenance without causing player interruption.



Michael Buras, CSFM

ST: How are you using social media? **Buras:** Social media is a great way to communicate. A dedicated Twitter account updates members on court status. Twitter.

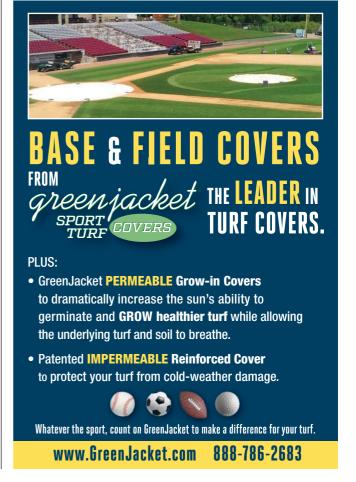
Instagram and a blog connect us with the small grass tennis court community.

S7: How has your career benefitted from being a member of STMA?

Buras: STMA and NESTMA have enabled me to meet many outstanding industry colleagues. As a sports turf manager, I strive to move forward and always learn from peers and researchers. STMA connects a network of professionals. Being a sports field manager is so much more than mowing the grass. The Certified Sports Field Manager program is a great way to communicate the professionalism and dedication of sports field managers.

ST: What do you like to do in your spare time? **Buras:** I like to cook, eat and try different foods. Walking, hiking and travel help work off the calories while enjoying nature. Watching "Game of Thrones" and discussing at home and work does take up a bit of time. **/ST/**





Can the STMA Conference jumpstart your career?

A compelling story on why you need to attend and how to sell it

// By JOE CHURCHILL

an you define your purpose in life? I'm not talking about what you like to do in your spare time, like hunt, fish, golf, coach your kids, travel, etc. This is all important stuff, I'm with you on that, but I'm talking about your work.

Most of us love what we do for a living. We are blessed. Yet some of us work a job rather than a career, and there's nothing wrong with that. There's something to be said for punching the clock and leaving it all back at work. It'll be there in the morning, right?

This story is for those who feel they're working a *job* rather than a *career* and have an authentic desire for a more fulfilling life. They're tired of blending into the masses, are willing to take on more responsibility and want to help make a difference. They want to blur that line between work and play. Dare I say they want to put a little fun into their workday?

If you're looking for ways to find your hidden passion, want to step out of the crowd and driven to accept that there is more to your job than being stuck in the same mind-numbing routine every day, I have a suggestion on how to take that first step. Make it a personal goal to get to next year's Sports Turf Managers Association Conference in Fort Worth, TX. Commit to learning more about the Conference and its educational and networking opportunities. Meet with manufacturers who serve our great industry and meet the great people who drive this great professional association. Develop an understanding of the Conference's value, not only to you but also to your employer.

Yes, it's easy for me to assure you the value of this opportunity far exceeds the financial and time investment. Yes, it's easy for me to say you should attend. Your deafening silence and eye rolls are not lost

on me! Right now, you're making a mental list of multiple reasons why it just ain't gonna happen:

- It costs a lot of money.
- I don't know how to ask. My boss will say 'no' anyway.
 - There's no budget for that.
- My employer has a policy against this sort of travel.
- It's time away from my job *and* my family.
- Heck, I'd probably have to take vacation days to go even if it was approved.
- It's frivolous and is just a vacation in sheep's clothing.

IT COSTS A LOT OF MONEY. Yep. There's a cost attached to the value of attendance. A head's up: Anticipate your employer factoring in the wages you'd make if you were back home working.

I DON'T KNOW HOW TO ASK. My boss will say 'no' anyway. As you set off to present your case for going, be careful when talking about costs or expenses. These are negative-sounding words. Use words like "investment," "opportunity," or "return on investment." Speaking of "ROI" why not turn the tables on this cost/benefit model and refer to NOT attending as a "COI"—Cost of Inaction! In other words, by not attending the STMA Conference, what could it possibly be costing you?

Do your research and be prepared to talk about making a \$1500-\$2000 investment in yourself and *the institution you work for.* Go to www.stma.org and explore the various educational tracks and specific topics that will be presented at the Conference next January.

Start by identifying two or three topics from the list of presentations that resonate with you. Think about how learning more about these topics could help you address ongoing sports turf management challenges you struggle with annually at your own workplace. There are several talks each year about how to save on fertilizer, chemicals or water, how to save labor dollars and manage field scheduling challenges. What you learn will more than offset the cost of attendance. Sell your boss on that return on investment. Showing your boss that you've done the research to effectively present your case will show him how serious you are, how important you feel it is to go and how committed you are to finding ways to do your job better. And as my wife always says, "The answer is always 'no' unless you ask."

Attendees who purchase a full conference registration receive free, unlimited, lifetime access to the educational sessions that are recorded during the conference. The content is available ondemand through your computer and portable devices including iPad, iPhone, and other tablet devices. You can share what you learn with your boss and colleagues.

THERE'S NO BUDGET FOR THAT. This may be a valid point. Companies, municipalities, schools, etc., all operate within an expense budget, just like most of us do at home. If the money just isn't there, it can't be spent. Creative budget managers can find ways around this by shifting dollars between accounts or deferring an expense. Maybe this is an option for you. If not, at least have the discussion this year and ask your boss if monies could be added to next year's budget that can be used for educational purposes or personal improvement. When you put it that way, it's a bit harder to say 'no', especially after you've thoughtfully presented your case. You may have to plan ahead.

MY EMPLOYER HAS A POLICY AGAINST THIS SORT OF TRAVEL, You got me there; you probably have an uphill climb in front of you. But don't assume that because it's always been done that way that that's the way it's always going to be. Lay your groundwork now and be first in line when the moratorium is lifted or the money begins to flow again. Perhaps these sorts of training opportunities are available to only those of a certain pay grade. Ask if an exception can be made once you've presented your case. Maybe you can negotiate or barter for what you want. Are there other "value-added" things that your employer routinely offers that you could trade or give up for a ticket to the STMA Conference?

IT'S TIME AWAY FROM MY JOB AND MY FAMILY. They'll do just fine without you at work while you're gone 3 or 4 days. None of us is indispensable, so don't even go there! The Conference takes place in January. If you feel it's your calling to attend and you want it bad enough, you'll figure out a way.

I'D PROBABLY HAVE TO TAKE VACATION DAYS TO GO. Yes, you might. I know of a few sports turf managers who have taken PTO days to attend the STMA Conference. Many of them also paid their own travel expenses, too. These are personal decisions to make. I also know of a couple turf managers who have had their attendance fully covered by their employer once their bosses saw the value. Perhaps you could negotiate some of these expenses with your employer. Maybe they handle conference registration and you pick up the airfare and hotel. Showing your boss you're willing to put some skin in the game will show him how important this is to you. Use "airline miles" and find a roommate.

IT'S FRIVOLOUS AND JUST A VACATION IN SHEEP'S CLOTHING. Not so. Do your homework, present your case and figure the return on investment. Your prep work will help combat this mindset. The STMA Conference is almost always held in warmer climates such as San Diego, Daytona Beach, Phoenix and San Antonio. Limited-thinking folks consider these locations to be "glamour spots" and it can make your job a bit harder. Would

it be an easier sell if it were held in Detroit, Des Moines or Bismarck? I'd like to think it wouldn't matter, but we both know better. Take the focus off the location and place it back where it needs to be: professional growth and learning new ways to become a more valuable asset to your employer. Defuse the vacation mindset by suggesting to your boss that they come along. I've seen this work, too. It's a great way for them to see the value firsthand, share in the expense and get to know you better.

Companies and institutions that invest in key personnel know they have a better chance of retaining them. Some of the mainstream methods of investing in employees include continued education opportunities that result in personal growth, more job satisfaction and making them feel they are more involved and part of something important. They may not vocalize this, but most employers understand this. The cost to hire and train people, pay them

and provide non-salary benefits (insurance, retirement accounts, pensions) becomes more staggering each year. Employers invest regularly in professional consultants and leadership coaches to help them motivate and retain great employees. Ignoring employee development opportunities only creates a work culture equipped with a revolving door, costing companies and institutions millions annually. Making a pitch to attend the STMA Conference isn't a career-changing event. But it could be a first step toward getting to where you want to go. Reach out to any one of us who have been there. Hope to see you in Fort Worth. /ST/



Joe Churchill is Senior Turf Specialist for Reinders, Inc., in Plymouth, MN and a member of the STMA Editorial Committee.



Get to know your Extension agent

Editor's note: We asked five questions of six University Extension program educators about their jobs. Thanks to Tanner Delvalle, Horticulture Extension Educator, Penn State Extension; Jared A. Hoyle, PhD, Assistant Professor and Extension Turfgrass Specialist, Kansas State; Bill Kreuser, Assistant Professor and Extension Turfgrass Specialist, University of Nebraska-Lincoln; David McCall, Assistant Professor, Virginia Tech; Jay McCurdy, Assistant Professor and Turfgrass Extension Specialist, Mississippi State University; and James Murphy, PhD, Extension Specialist, Turfgrass Management, Rutgers University.

How can turf managers best take advantage of your Extension program?

KREUSER: There are several ways to engage in our Extension programs. Local turfgrass managers can attend Summer Field Day or the Nebraska Turf Conference each year. We also do site visits for managers around Nebraska. We try to use the Internet to expand our reach globally. We maintain a website, turf.unl.edu, with resources and research summaries. We also write weekly "Turf iNfo" articles about pertinent topics in turf management. Managers can sign up to receive these in their email automatically on our website or by becoming members of the Nebraska Turfgrass association. We use social media, mainly Twitter and YouTube, to disseminate our extension content. The goal for my Twitter account is to bring the current research and ideas to turf managers. It is also a great way to start dialogs about controversial topics or ideas in turfgrass management.

HOYLE: The K-State Turfgrass Extension Program uses many traditional and non-traditional techniques. We have many publications on the K-State Research and Extension Bookstore and K-State Turfgrass Information Pages that helps homeowners as well as turfgrass professionals. During the past couple years we have increased our digital presence. We have developed

a new website (k-state.edu/turf) and blog (blogs.ksu.edu/turf), increased our reach on social media presence (@KSUTurf, facebook. com/KSUTurf, digital newsletters, and advertised our program in some nontraditional methods (Vehicle Wraps, see backdrop on Twitter). Dissemination of information leads turf managers back to the website that contains real time information on the blog, links to publications, events, jobs/internships, research reports, and the undergraduate and graduate turfgrass program. Having this information at the turf manager's fingertips "helps me help them." I know everything about turfgrass



Bill Kreuser, PhD

management is not on the website but it is a start. That baseline information starts people in the right direction with whatever issue they maybe facing and starts the dialogue to correcting anything they might face.

Other ways turfgrass managers can take advantage of the turfgrass extension program is by attending annual field days and turfgrass conferences. Turfgrass managers now can get information online 24 hours a day but when you attend a conference or field day you create connections not only with extension and research personnel from universities, you can create personal contacts within the industry. The contacts that you create when attending onsite training

completes a circle or web of information between research, extension, practitioners, industry and universities that strengthen the entire turfgrass industry.

DELVALLE: Turf managers can use extension programming in several ways including attending local and regional meetings, scheduling on-site visits, joining an advisory committee, or by subscribing to one of our newsletters.

MCCALL: We have a variety of opportunities for turf managers to use our Extension program, both through direct channels and indirectly through various associations and meetings. I feel



James Murphy, PhD

like we have a very strong Turf Extension team in Virginia, with Drs. Mike Goatley, Shawn Askew, Jeff Derr, and myself all having Extension appointments. Additionally, we have a strong support team around us that assist with field research, coordinating meetings, and sometimes filling in for us when we are unavailable to present. We all work very closely with the various associations, such as the Virginia Sports Turf Managers Association. We typically participate in the VSTMA educational programs as often as possible. A large number of sports turf managers reach out directly to us, but many also work through local Extension Agents for problem solving.

MCCURDY: Attend educational events! The scale and scope of these events allows exchange of knowledge much better than handholding over the phone or by email. Join your state turf and regional associations. Ours sends out a quarterly magazine and almost weekly updates.

MURPHY: We have a number outreach programs that extend recommendations to turf managers. Our partnership with the New Jersey Turfgrass Association, Sports Field Managers of NJ, Golf Course Superintendents Association of NJ, NJ Landscape Contractors Association and others enable us to conduct multiple field day tours each summer of our research farms for the sports, golf and landscape industries. These same partners help us coordinate the annual NJ Green Expo, which brings in speakers from around the country as well as Rutgers to present the latest information on turfgrass science and management. Our fact sheets and bulletins are available online (http://njaes. rutgers.edu/pubs/) for free. We also have a turf blog (http://turfblog.rutgers.edu/) and plant pest advisory newsletter (http://plantpest-advisory.rutgers.edu/category/landscapenursery-turf/) that distribute information on turfgrass management through the Internet. Of course, we still answer inquiries via phone and email. And we are always looking for feedback from turf managers about how they like to receive information.

What are your specific job responsibilities, and about how much time do you spend on different segments?

HOYLE: According to my job description part of my specific responsibilities include "establish an innovative and proactive statewide extension and applied research programs that address priority needs of the turfgrass industry and complements the state-wide horticultural extension effort. Also, assist individuals from all facets of the Kansas turfgrass industry." I know it is very vague on what that all means but ultimately my specific job responsibility in my own words is "To do what I love doing (applied turfgrass research) and get that information out the industry in an effective manner where turfgrass managers utilize

that information." But it is not as simple as getting information out to turfgrass managers but figuring out if what we are doing as turfgrass research and extension professionals is making a positive impact in the industry. I have a 60%/40% split between Extension and Research here at Kansas State. My applied research and extension program focuses on low-input turfgrass systems, weed management and nontraditional extension outreach tools. There is a joke with new Assistant Professors that although they may have a split they operate at 100%/100%. It is hard to tell exactly how much time I spend on extension or research as they both complement one another.

INSTEAD OF TRYING TO FIGURE OUT HOW TO SURVIVE BY DOING MORE WITH LESS, I CONSTANTLY LOOK 5, 10 YEARS DOWN THE ROAD AND FIGURE OUT HOW CAN WE NOT ONLY REMAIN SUSTAINABLE BUT ALSO GROW.

- Jared Hoyle, PhD

DELVALLE: My position with Penn State Cooperative Extension is technically titled "Commercial Horticulture Educator." I am responsible for Green Industry (which includes turf and ornamentals), Vegetable Production, and Fruit Production. In the winter months, most of my time is spent presenting at local and regional meetings on turf-related topics. Because of my geographic location in Pennsylvania, a large number of Christmas tree farms are nearby, and I service these clients on pest management as well. I also work with right-of-way and industrial weed control

organizations, which uses a fair amount of the same chemistries as turf managers. As far as research, I have done research on hops, watermelons, and turf within the past four years in extension. Every day is different, that is for sure.

MCCALL: I have a 50/50 research and Extension split, but also help out with guest lecturing in some of our undergraduate courses. The number of Extension presentations varies from year to year, but a ballpark figure is about 25 talks spanning from pesticide recertification to specific project updates at association meetings. Like most faculty with an Extension appointment, a major emphasis of my research program is built on problem solving for whatever issues may come up across the state. Generally speaking, our best projects come from talking with turf managers about issues they struggle with and trying to come up with new solutions together. I try to balance my research program with projects that provide an immediate impact and those with larger benefits further down the road.

MCCURDY: My appointment is 80% Extension and 20% Teaching. But I feel like I do 100% of everything. We have a robust research program, with several grad students. I alternate teaching "Intro to Weed Science" and "Turfgrass Weed Science" every fall. My Extension appointment means I not only deal with industry professionals, but also homeowners, municipalities, and government agencies. I try to write magazine articles and scientific papers when time allows. And I travel as much as possible to do site visits and presentations.

MURPHY: My appointment is a threeway split; approximately 2/3 of my time is spent on Extension activities while the remaining 1/3 is spent on research and teaching. I strive to integrate my activities across all three responsibilities. My research projects are typically problem solving focused, which result in recommendations useful to a turf manager. Thus, the data and conclusions generated are essentially the information that a turf manager will hear at field days and our annual Green Expo. Research findings are also likely to be summarized in fact sheets and bulletins and incorporated in my teaching responsibilities: training graduate students and course materials for undergraduate students.

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KREUSER: I have a three way split: 50% Extension, 35% Research, 15% Teaching. I enjoy having this split because my applied research is applicable to my extension and teaching programs. I teach two, three credit, courses each year (Advanced Turf Management and Physiology and Urban Soils). I also advise four graduate students and several undergraduate research students. A big part of the research component includes writing grants to fund my students and program, publishing research articles, and actually doing the experiments (design, data collection, analysis and interpretation). Extension responsibilities are multifaceted with site visits and articles in the summer. appearances on our Backyard Farmer TV show, a couple dozen extension publications around the country each winter. I spend a lot of time continuing to develop, market, and run tech support for our app, GreenKeeperApp.com. The interactions with students during teaching and growers during extension helps to shape our research. It is a synergistic relationship.

Where is your state regarding any pesticide/ herbicide bans or restrictions, and what is your message to turf managers regarding the issue?

MCCALL: I would say that Virginia is somewhat middle-of-the-road on pesticide bans or restrictions. We do not have the widespread struggles that some of our neighbors face, though there are some municipalities that have moved forward with legislation to reduce certain inputs. Most pesticide regulatory decisions are made at the state level. The Virginia Department of Agriculture and Consumer Services works well with Virginia Tech and many commodity associations to ensure that pesticides are applied safely and with the least deleterious impact on the environment as possible. My message to turf mangers is to stay ahead of future regulations by doing things the right way; practice sound cultural practices so that your pesticide applications are most effective, keep good records of everything you apply, and always search for ways to reduce chemical inputs without sacrificing playability.

MCCURDY: Off target effects of dicamba have resulted in restrictions on its use for row-crop agriculture, but it's still available in various forms for turf. It's old news, but MSMA is restricted use and can't be applied to sports fields. Buy from a reputable dealer and make sure you're following label instructions. Read the label!

MURPHY: New Jersey has had bills proposed that would severely restrict and, in some cases, ban pesticides. Much of this proposed regulation has been targeted at school and municipal grounds. To date, New Jersey has passed legislation that mandates Integrated Pest Management



Jared Hoyle, PhD

(IPM) for indoor and outdoor pesticide usage on schools. The School IPM law also requires direct notification of pesticide use to students, parents and staff. Some have incorrectly interpreted the School IPM law as a ban on pesticides, which has made educational efforts more challenging. Similarly, many people think that IPM and the organic management philosophy are the same. Thus, we often spend a fair amount of time teaching people what IPM is and isn't before we get to details of actual IPM practices. My message to turf managers is to stay current with the latest information on pest management strategies. Being knowledgeable and credible on pesticide regulations and pest management philosophies is crucial to a constructive discussion in developing appropriate regulation of pesticides.

KREUSER: Not much of an issue.

DELVALLE: Currently, Pennsylvania doesn't have any major pesticide restrictions like some of our neighboring states, but that would presumably change in future years. We educate turf managers on these issues, as some of them already deal with them if they perform work in these nearby states. Discussions do occur on pesticides at the local level and it is important that the voice of our industry must be heard before regulations are put in place, and not after. In some cases, those who make decisions on restricting the use of pesticides have not included the users of these products, which is not a desirable situation.



Tanner Delvalle

How have any recent budget cuts (or increases!) affected your work?

MCCURDY: My lab pays a higher percentage of the bills than we used to, there's no doubt, but at Mississippi State, we've got great support. The state's industry is growing and administration sees value in keeping a turf teaching and research program. While government funding for higher education and research is certainly important, I think we too frequently overlook the importance of industry responsibility and support (see my next response).

MURPHY: Budget cuts at Rutgers are certainly challenging, which I am sure is of no surprise. Receiving a grant award is about the only way to effectively see a budget increase; preparing and submitting

grants, when available, requires considerable time. Budget cuts have steadily reduced support staff and operating budgets, which increasingly constrains my time that has to absorb that workload. Thankfully, technology (computers, email, smartphones, etc.) has helped to offset this, but the offset is only partial. "Cuts" have also come in the form of greater personnel costs (fringe benefits), which means that increased costs for graduate students and staff positions reduces what is available to spend on laboratory and field plot maintenance, materials, supplies and equipment.

KREUSER: Turf research and extension programs depend on grants and donations to flourish. There is little federal grant support for turfgrass research. Our program is very thankful to have received grant support from USGA, the Nebraska Turfgrass Association, and various industry partners to sustain a strong program. Nationally, the reduction in turf students possesses a real threat to turfgrass research and extension programs. It is difficult to justify hiring a turfgrass professor in a program with a handful of students. This reduces or eliminates research and extension programs within a state or region.

DELVALLE: Here in Pennsylvania, we have been very fortunate to have the support of our local and state governments for extension funding. Turf research at the University level continues to grow, and our extension programming allows the information from research to be disseminated to industry professionals. There are not many educators who focus on turf management, so the lack of personnel keeps us very busy on turf-related issues.

MCCALL: Virginia has faced a series of budget cuts in recent years, but I think that we have fared well compared with some of my peers in other states. Like everyone, we are asked to do more with less. Immediate contact through emails, text, and social media allows us to stay connected with many people, but I definitely don't have the opportunity for as many site visits as I once had. I feel like there is an unspoken expectation for us to focus on events where we can communicate with more people at once, rather than individual visits. This is understandable but it does diminish our ability to see many problems in person and

get our hands dirty with the turf mangers. I always learn something new from each site visit. I typically try to tie in a few site visits when I am already traveling through an area for Extension talks or field research.

HOYLE: Like many turfgrass managers across the nation I have been affected with reduction in resources. This has created a sense of how can we do "more with less." It is easy to fall into a negative spiral every time you hear that resources are not going to be available in the future but it has

TURF RESEARCH AND EXTENSION PROGRAMS DEPEND ON GRANTS AND DONATIONS TO FLOURISH. THERE IS LITTLE FEDERAL GRANT SUPPORT FOR TURFGRASS RESEARCH.

- Bill Kreuser, PhD

created an opportunity to become more innovative. Instead of trying to figure out how to survive by doing more with less, I constantly look 5, 10 years down the road and figure out how can we not only remain sustainable but also grow. Many times this is thinking outside of the box and trying new things. In the short term, reductions in resources do require more time, more dedication, sacrifice and change. In the long term, hopefully it will lead to new ways of thinking and development and growth of the turfgrass industry.

Is there any specific advice you share with turf managers more often than any other?

MURPHY: Soil quality/health and seed recommendations are the two most common subject matters that I address

with turf managers. The quality of a soil (whether it be compaction, fertility, biology, etc.) is something that is not easily recognized by property owners and managers. Yet it has tremendous impact on the ability to produce a persistent, high quality turf. Poor soil means that more fertilization, irrigation, and pesticide use are needed than typically would be expected. The ultimate solution is to "fix" the soil but this isn't always seen as feasible. I often refer to these greater inputs as "Band-Aid" practices, because these only mask the underlying problem. Additionally, there is a reluctance to use enough turfgrass seed (or sod) to repair turf. I am often surprised by the willingness to spend considerable resources on pesticides yet there is essentially little to no budget for overseeding and sodding repairs. There have been numerous site visits were the recommendation is to essentially flip the focus from spending money on pesticide applications to overseeding and/or sod repair work.

DELVALLE: For the most part, every situation is different. Most of the questions I get asked are fairly complex, and aren't something that can be easily found on Google. Though one thing that I do discuss in conversations weekly is proper mowing practices. I find that many folks either don't use sharp mower blades, mow too low in the summer, or don't mow often enough.

MCCALL: My best advice to any turf manager is to be involved and connected as often as possible; talk with us, talk with your peers and/or mentors, go to meetings, attend the STMA or state chapter conferences, attend field days. Take a few minutes each day to scroll through social media posts directly related to your industry. I learn a lot from Twitter, even if I am not chiming in with my thoughts.

HOYLE: Do what is going to make you sleep better at night.

MCCURDY: One, pay a fair wage! The price to get an undergraduate degree has more than doubled since the late 90's. For this reason, undergrads have taken on more debt. As an industry, we've got to provide a pay incentive if we want to attract top talent. Two, put out a preemergence herbicide! /\$7/

Turf in tennis court installations: an emerging market

// By MARY HELEN SPRECHER

Tennis whites and green grass courts have long been associated with Wimbledon, and with the elite players who qualify to play there. Of course, it's not just the image of the well-moneyed strawberries and champagne crowd that has kept most people from attempting to put those courts in clubs and schools across the US – it's been the thought of the upkeep.

But given the increasing use of synthetic turf in athletic installations, maybe it's time to re-examine that idea. Tennis court builders say there is merit in using synthetic in a variety of situations. All the idea needs is a push.

"We are installing more and more every year and I think it's a great product," says Eric Loftus of Cape & Island Tennis & Track in Pocassett, MA. "I play on it once a week myself."

The option of a new synthetic turf court is something many players may find attractive. Its drainage system allows it to be playable minutes after a heavy rain (alas, not something you'll find at Wimbledon) and multiple matches can be run across it without it needing rest. It's also softer than asphalt and cleaner than clay.

An additional bonus is the ability of the owner to select an appropriate color. While many courts are the green that is associated with Wimbledon, it's also possible to create an effect that simulates the mowing patterns. A dark brown or dark red carpet will give the appearance of clay, for those yearning for a French Open-inspired design.

According to Rick Burke of NGI Systems in Chattanooga, TN another advantage of turf is its ability to be tailored to allow for maximum return on investment.

"Technically, the face weight (amount of yarn per square yard), gauge of the product (width of rows at which the product is tufted) and the type of yarn utilized in construction will dictate longevity and durability of the product. Therefore, a



All images courtesy of Pro-Sport Construction, Inc., Devon, PA

slightly shorter and denser construction means the infill is more contained, allowing for better traction and less abrasion to the surface fibers. The court will generally wear better and play more consistently. This is true for all turf courts, aggregate infilled and artificial clay infilled construction."

Additionally, he says, the depth and type of the infill used creates the cushioning effect of the surface and also determines the ball speed and playability of the surface. Various infill materials are available on the market; facility owners should speak with the builder about the type of play the court will host, and what the preference of the playing crowd might be.

Burke also notes that among the innovations on the market is the ability for the user to choose between polypropylene (PP) and polyethylene (PE) yarns.

"PE yarns, although more expensive, are a more durable fiber system as opposed to a PP (plastic) yarn," he states. "Comparative test results show that the newer PE product has a better wear feature as evidenced through wear (taber) abrasion tests and stud testing. The "stud test," completed at 15,000 wear cycles has proven the PE yarns improved wear ability over PP to be 500 percent better wear."

Use of turf as an overlay

Often, a turf court is used as an overlay for an existing facility, such as that made out of asphalt or concrete, which has become badly weathered or cracked. It is essential to note, however, that a turf court is only as good as the pavement it is laid on; therefore, a cracked pavement must be leveled to insure planarity. If it is not, the turf will wear unevenly and the cracking will be visible as uneven areas in the playing surface. Once that type of wear becomes apparent, the surface must be completely replaced; resurfacing is not a possibility.

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MAMA

This photo is from Florida State University's football stadium field and was taken right after spring graduation. When I saw this damaged area, I inquired about what might have caused this damage. The FSU students have quite a bit of access to this stadium and even are allowed to use the bleachers for exercise. Well these holes are not a result of wear or some kind of event as you might have suspected; they are a result of student vandalism of sorts. As it turned out, students sneak out onto the field from time to time and dig up a piece of grass for their graduation scrap book as

a memento of their years at the university. The problem is not too prolific; however it does occur from time to time as the photo shows. Since it happened in the springtime just after the overseeded ryegrass had transitioned out of



the bermudagrass, the area was lightly topdressed and the grass was allowed to grow back over on its own.

Thanks to Kyle Slaton, CSFM, Assistant Athletic Director for Turf Management at Florida State University, Tallahassee, FL for allowing me to take this photo.

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.





"It is a great option as an overlay for an older asphalt court for two reasons: it ads cushion and is a middle of the road project price-wise when considering repair vs. reconstruction." notes Loftus.

Turf courts are also viewed as excellent options for difficult installations, such as those on rooftops.

As with turf facilities used for other sports, there are multiple advantages, including the ability to permanently line the facility for play, including youth play. There are also the disadvantages including the warmer playing surface, the need to keep the turf clean of impurities, and the higher cost to repair damages caused by improper use, vandalism, etc. In fact, because of that cost, it is not recommended as a tennis surface in installations that will not be supervised, or which might be subject to vandalism.

Other sports on the courts

While many fields can be marked with lines for other sports (leading to one field with three, four or more sets of lines on it), it's not often one sees a tennis court lined for other play, at least not outside of municipal settings. And there's a reason for that. According to the rules of the sport, courts for sanctioned play must be lined for tennis only, meaning they cannot include lines for basketball or any other sports. (In recent years, however, the rules were relaxed to allow youth tennis lines for shorter court play to appear on a court; however, they cannot appear in white, and it is recommended they be lined in a color that can be seen against the court surface, but will not pose a distraction to players.)

If a turf court is set up on a field where other sports are hosted, it is essential the court not only be built using proper dimensions but that all clearances behind baselines and outside sidelines be observed. If net posts will be removed to allow play for other sports, the postholes must be capped to eliminate the risk of injury to field sports players.

Maintenance

Maintenance of a turf tennis court is not unlike that of a sports field:

■ Preseason maintenance will include looking for standing water (a sign of non-



functioning drains) that can result in slick areas, and ascertaining that playing lines are still bright and visible.

- Regular maintenance includes brushing to make sure infill is distributed consistently over the court surface, and to keep the turf fibers standing up. Periodic watering will assist in compacting the fill uniformly and keeping the courts cool for comfortable play. (Just as with a sports field, a turf tennis court will hold heat.) Club courts should be brushed every week to maintain optimal playing quality.
- Regularly remove debris including leaves, pine needles and more by using a leaf rake and shovel, a leaf collector or a blower. Courts may need to be checked for torn or loose seams, repaired as necessary, and to have algaecide and/or fungicide applied as necessary.

Manufacturers of specific turf systems will be able to provide directions indigenous to their brands, including instructions for cleaning, stain removal and so forth.

Whether it's a new court or a rehab of an existing project, the bottom line is the same: You want a good facility that is going to be enjoyable to use. For this reason, the planning part of your project is as important as the construction.

All tennis courts, when built, must conform to the rules of the sport, as

promulgated in the U.S. by the United States Tennis Association. (A publication, *Tennis Courts: A Construction & Maintenance Manual*, is jointly published by the USTA and the American Sports Builders Association, and can provide owners with information regarding design, construction, amenities, accessories, lighting and more.)

In addition, invest time wisely by finding the right partner. Seek out a tennis court professional who has worked with turf installations; experience is very important since tennis court construction requires specialized knowledge of the sport and its facilities. /\$T/

Mary Helen Sprecher wrote this on behalf of the The American Sports Builders Association (ASBA), a non-profit association helping designers, builders, owners, operators and users understand quality sports facility construction. The ASBA sponsors informative meetings and publishes newsletters, books and technical construction guidelines for athletic facilities including tennis courts and sports fields. It also offers voluntary certification programs in sports facility construction and maintenance. Available at no charge is a listing of all publications offered by the Association, as well as the ASBA's Membership Directory. Info: 866-501-ASBA (2722) or www.sportsbuilders.org



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BOSS Snowplow



Billy Goat Force blowers

The perfect solution for leaf cleanup around facility grounds, Force wheeled blowers provide up to 7x the power of a backpack. Smooth rounded composite housing versus stamped steel eliminates air voids for quiet

output, will not rust or dent, and is up to 34% lighter in weight. Advanced technology fan is a single shot 16-blade closed face. Combined CFM and necked down discharge create high pressure and discharge velocity resulting in maximized work. With up to 52% more concentrated debris blowing force and 55% more air velocity, operators can blow debris farther and clean up facility grounds faster this fall. Available in 9, 10, 13 and 18 hp.

Billy Goat



Topdresser attachment for Grasshoppers

Our New ECO 75G is a topdresser attachment for Grasshopper. The New Generation ECO 75G uses PTO drive, precise zero-turn technology, to spread any bulk material: compost, topsoil, sand, crumb rubber and pelletized product. This applicator was developed based on our own experience as lawn care professionals and also incorporates suggestions from our customers. It was designed to meet the need for a ride-on topdresser that makes topdressing turf practical and cost-effective. The ECO 75G spreader integrates features normally found in much larger topdressers into our own proven lightweight and manoeuvrable.

Ecolawn



Pin-on coupler for Turf Pushers

Pro-Tech Manufacturing and Distribution, Inc. announced that its Turf Pusher product line would now come standard with a pin-on coupler design. Both 6 and 8-foot Turf Pusher models now come with pin-on coupler that gives dealers and end users the ability to easily interchange coupler styles to adapt to different prime movers. Couplers for all compact machines (John Deere, Bobcat, Toro) including UTV's now available. The Turf Pusher, the first containment plow designed for clearing snow from turf sports fields was launched several years ago and says this design will give customers increased versatility by allowing them to swap out different coupler plates to adapt to the required prime mover. Customers simply remove several locking pins on the rear of the Turf Pusher and switch out the coupler plate. This feature replaces the previous fixed-coupler design that was welded to the Turf Pusher's chassis.

Pro-Tech



Largest indoor complex gets Ecore flooring

Located in Manheim, PA Spooky Nook Sports is the largest indoor sports complex in North America at 700,000 square feet. "In the past, fitness facilities were focused on fitness alone, and the emphasis was on machines and how many they could cram into a space," said Jim Launer, MS and managing director of athletic operations at Spooky Nook Sports. "There also was only a small focus on weights, and the floors were an afterthought. Typical fitness surfaces included carpet or thin rubber surfacing over concrete with the main benefit being that they were easy to clean. The focus is now on strength and conditioning - jumping, sprinting, throwing and crawling." Spooky Nook converted six tennis courts into a fitness and training area; the space features a performance track, turf field, turf hill, basketball court, weight lifting area, and sled lane that were developed with Ecore Athletic surfaces.

Ecore Athletic

MOWERS



Deere large area reel mower

The John Deere 8900A PrecisionCut Large Area Reel Mower offers turf professionals a productive and versatile reel mower solution. The 8900A features a broad width-of-cut (114-inch or 130-inch) and 8 mph mowing speed, allowing operators to cover more area in less time. A shorter wheelbase (62.4 inches) makes the 8900A more maneuverable in tighter areas. Additionally, an operator station with easy-to-use fingertip controls and air ride seat offer operators improved productivity and comfort.

John Deere



Toro Reelmaster 3555-D/3575-D

Toro recently introduced two new models in the Reelmaster family of reel mowers, the Reelmaster 3555-D with 5-inch reels and the Reelmaster 3575-D with 7-inch reels. Both deliver a 100-inch (2.5 m) width of cut. The new mowers also feature Toro's new EdgeSeries reels in 8- or 11-blade configurations, and are built on proven and tested Reelmaster platforms. These machines feature Toro's proven Dual Precision Adjustment (DPA) cutting units with EdgeSeries reels that retain their

edge longer, and provide a crisp, clean cut. The efficient traction system enhances maneuverability in wet conditions, while the three-wheel design minimizes turnaround time and wear and tear on turf. Additionally, the all-wheel drive traction system prevents wheel slip and loss of traction for improved performance. The new models are compact, yet powerful. New design enhancements optimize the power needed to drive the cutting units and traction system, maximizing the overall utilization and efficiency of the 24.8 hp (18.5 kW) engine.

The Toro Company



Jacobsen turf equipment

Jacobsen offers high-quality turf equipment solutions to the landscaping industry through our commitment to delivering machines that match the power and performance you need to complete turf maintenance tasks with ease. For more than 95 years, Jacobsen has been providing industry-leading turf equipment and is driven to help customers consistently and cost-effectively manage perfectly manicured, healthy turf. Jacobsen offers a wide variety of equipment including zeroturn mowers, rotary mowers, reel mowers, aerators, sprayers, and more that can assist you in keeping your turf looking its best. Jacobsen mowers can assist you in covering higher amounts of acreage in less time to increase efficiency and cut down on your mow time without sacrificing performance. Jacobsen

Kubota ZD1500 Series

Kubota's newest addition to its ZD-Series is the ZD1500. The ZD1500 features a wide mower deck and a Tier 4-compliant 30.8 horsepower Kubota diesel engine with a Diesel Particulate



Filter (DPF) for standout power. Kubota's patented innovative Aerodynamic Cutting System provides for smoother airflow and a more powerful blade rotation resulting in less clumping of clippings, better fuel efficiency and faster cutting performance. The new ZD1500 mower is the most powerful of Kubota's highly coveted ZD-Series, delivering high-volume cutting efficiency and professional performance for large turf acreages, from residential estate owners to schools and municipalities.

Kubota



New Steiner 450 tractor

Steiner tractors have been at home on sports fields for more than 30 years. The 450's frame oscillates to keep the operator balanced and in control when mowing on any terrain. With its low center of gravity and four-wheel drive, the 450 provides unmatched traction and stability. It is also available with a wide variety of site preparation and turf maintenance attachments including mowers, aerators, blowers, sweepers and more. Groundskeepers rave about the 80" Steiner flex deck finish cut mower that assures level playing fields of a smooth, professional cut. The tractor's articulating frame provides a tight turning radius of 43.5 inches for maneuverability in tight spaces.

Steiner Turf



Infinicut mower from Cub Cadet

The Infinicut turf mower puts you in control and will allow you to improve the quality of any sports turf. With a dynamic return floating head, variable cut rate, flexible setup, and all-electric operation, the Infinicut sports turf mower ensures a healthy turf while providing an unrivaled quality of cut. Find out why the greatest sports venues have made the switch and learn more at www.cubcadetturf.com/infinicut.

Cub Cadet Turf



Trimax Snake mower

The Trimax Snake has found success on some of America's most prestigious golf courses. A recent video promotion from Trimax showcases the Snake mower and testimonials from users working on influential golf courses across Southern USA. With more than 30 years of innovation and engineering poured into the Snake; a mower predominantly designed for high quality sports turf and golf courses, the accolades come as no surprise. "Since investing in two Snake units, we can get through all 36 holes

with one person, saving labor costs and offering time to spend fine-tuning other areas." - Brian Buckner, Superintendent at the Golf Club of Houston.

"I was looking at how strong the machine was built, the thick metal that it was built out of and I knew that it was going to spend very little time in my shop." - Cory Phillips, Equipment Manager for the Golf Course of Georgia.

Trimax Mowers



Exmark Lazer Z E-Series ZTR mower

Exmark now offers 72-inch versions of its Lazer Z E-Series commercial zero-turn mower, in both side- and rear-discharge configurations. Built to stand up to years of tough commercial use, the machine features a heavy-duty tubular steel unibody frame and simplified hydro drive system with exclusive Parker unitized pump and wheel motor systems; no hoses to leak. 72-inch mowers are powered by the twin-cylinder Kawasaki FX801V commercial engine, with features including heavy-duty cast-iron cylinder liners and dual-stage canister air filtration. Sidedischarge models utilize Exmark's UltraCut Series 4 cutting deck in a choice of 48-, 52-, 60-, or 72-inch widths, while rear-discharge models are available with 60- or 72-inch UltraCut Rear Discharge decks.

Exmark

Husqvarna M-ZT 61 zero-turn mower

Husqvarna offers a series of commercial zero-turn mowers, each engineered specifically to the user's needs with best-in-class quality. Offering reliable, clear-cut performance paired with high-quality decks and powerful engines, Husqvarna's continued focus on product and design innovation has led to a variety of advancements for its commercial zero-turn



mowers. With an industry-leading warranty of four years or 750 hours, this zero-turn is practical for all property maintenance needs. Features of the M-ZT 61 include a heavy-duty steel frame, a commercial rated hydraulic system, a rugged fabricated steel deck for mulch and collection capability and adjustable ergonomic steering levers.

Husqvarna



Walker's Most Powerful Mower Ever

The H38i is an exciting addition to the proven Model H family of high production mowers. It is the most powerful Walker Mower featuring 38 horsepower, Delphi® fuel injection, and impressive torque. This machine is capable of operating all of Walker's biggest decks and attachments with ease. The H38i features a redesigned rear axle for superior handling at high speeds on rough ground. This, along with a 4-way adjustable Grammer suspension seat provides personalized comfort keeping you productive on long days. This year-round machine can also be fitted with an operator cab, two-stage snowblower, dozer blade and rotary broom.

Walker Mowers





▶FIELD

THE NEST

CLOVER SD BASEBALL FIELD

▶LOCATION

Clover, SC

- ▶ Category of Submission: Schools/Parks Baseball
- ▶ Sports Turf Manager: Will Rogers, CSFM
- ▶ Title: Sports Turf Manager
- ▶ Education: Sports Turf Manager Certification
- ▶ Experience: 2 years at Clover Recreation Department: Athletic Field Assistant Manager; 5 years at City of York Recreation Department: Sports Turf Manager; 2 years at River Hill Golf Course: Fairway Turf Specialist; 18 years at Clover School District: Sports Turf Manager
- ▶ Full-time staff: Lee Clinton, Andrew Love, & Nick Jackson
- ▶ Part-time staff: Hank Wofford, Garrison Clinton, Frank Falls, & Nathan Bailes
- ▶ Original construction: 1986
- ▶ Rootzone: Native soil, sandy loam. 60% sand, 40% other
- ▶ Turfgrass Varieties: Common bermudagrass overseeded with perennial ryegrass blend

- ▶ **Overseed:** Overseeded yearly with PHD perennial ryegrass blend; overseeded in three directions at a rate of 10 lbs/1000 sq. ft. Seed germination within a week.
- **▶ Drainage:** No system

Why STMA should consider your field a winner?

The baseball facility at Clover High School, also known as "The Nest," is quickly becoming one of the favored baseball facilities in our area. While we feel that the facility has always been a great part of our Sports Turf program, the new coaching staff has added new vision and cooperation to our Sports Turf Program. With change comes new excitement to the facility. New vision inspires new challenges for the Sports Turf Program, but with the help of the coaching staff and players, the facilities' new vision is becoming a reality.

One of the challenges that we are always fighting at "The Nest" is the outdated irrigation system. The hydraulic irrigation system

The Field of the Year Awards program is made possible by the support of sponsors Barenbrug USA, Carolina Green Corp., Ewing, Hunter Industries, and World Class Athletic Services.

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was installed in 1999, and parts are becoming hard to come by. The hydraulic system was not adequately watering the infield skinned area, so we installed a new electric system to offset the gaps of the old system. Although this is not the perfect situation, we are making the two systems work until a new system for the outfield can be afforded.

Another challenge we have faced over the years at "The Nest" has been the changes in base and walk up paths. Each year it seems the coaching staff changes their minds on whether they like skinned or grass base and walk up paths. This year they chose to go back to the grass walk up paths and skinned base paths. The previous coaching staff preferred the skinned walk up paths and grass base paths. The back and forth always presents a challenge over the summer and at the start of the season.

The biggest challenge of the year has been the addition of three new facilities throughout the district. Manpower, resources, and time have been diverted away from the high school fields to the opening of a new middle school, elementary school, and aquatic center.

We feel that we can overcome these challenges with education, prior experiences, and versatility. We have five employees who truly care about our facilities, athletes, and teams. We all bring different qualities and strengths to the team. Teamwork and the love of the profession is the right recipe for meeting these challenges and what makes our fields what they are today.

Dr. Marc Sosne, Superintendent

Dr. Marc Sosne, superintendent of the Clover (SC) School District, sent us these comments:

"The Clover School District is unbelievably proud of our athletic fields, and that they have been recognized by STMA as the best in the nation over a 3-year period. Our student athletes deserve the best fields on which to play, and we couldn't be prouder that our efforts to provide those quality fields have been recognized. Further, our community sees our athletic facilities as sources of pride and see that their investment of tax dollars is being well spent.

"Before attending my first STMA conference I had no idea of what to expect. All I knew was that our grounds staff was being honored for their hard work and accomplishments. What a surprise I had when I got to San Diego and saw the magnitude of the conference, and how impressed I was to see the importance of the schools, universities and communities represented. I couldn't have been more proud of our grounds crew and the great work they consistently perform year in and year out. The fact that our same crew has been honored three consecutive years for three different fields (football, baseball and softball) speaks to the outstanding job that each of them does.

"The STMA Conference far exceeded any expectations that I had. Going to San Diego in 2016 and to Orlando in 2017 gave me the opportunity to learn more about the STMA and to gain a much better appreciation for the great job our crew does. It also gave me great assurance that the investments we make in our facilities and fields are worth every penny."





www.sportsturfonline.com October 2017 // **SportsTurf**







MAINTENANCE PLAN

JANUARY 2016

- ▶ Filled in all holes, edged infields, checked distance of bases to get ready for season, and added infield mix
- ▶ Routine daily maintenance of infield
- ▶ Installed French drain from home plate area to backstop to help dry up home plate area after rains
- ▶ Installed new benches in dugouts, and bullpen areas

FEBRUARY 2016

- ▶ Began mowing ryegrass at 1 inch as needed
- ▶ Checked soil temperature, 43 degrees on Feb 23
- ▶ Routine daily maintenance of infield
- ▶ Replaced sod around mound and edges down first and third base lines
- ▶ Mound repair
- ▶ Applied 2 tons of Turface MVP to infield
- ▶ Applied 20-0-8 Ronstar (1.5 lb. N/1000 sq. ft.)
- ▶ Applied 24-5-11 Slow Release (0.84 lb. N/1000 sq. ft.)

MARCH 2016

- ▶ Mowing grass 3 times a week at 1 inch
- ▶ Filled in bullpen with warning track material





- ▶ Routine daily maintenance of infield
- ▶ Turned on irrigation March 31
- ▶ Replaced and raised irrigation heads as needed on field
- ▶ Added infield mix to low spots on infield
- ▶ Checked soil temperatures 51 degrees (March 12 frost) on March 22
- ▶ Applied 46-0-0 (1.1 lb. N/1000 sq. ft.)
- ▶ Games = 11

APRIL 2016

- ▶ Applied 32-0-5 (1.3 lb. N/1000 sq. ft.)
- ▶ Mowing grass daily at 1 inch
- ▶ Routine daily maintenance of infield
- ▶ Irrigate infield as needed
- ▶ Applied Mefenoxam 2 AQ Fungicide– (1oz/1000 sq. ft)
- ▶ Games = 12

MAY 2016

- ▶ Mowing grass daily at 1 inch
- ▶ Routine daily maintenance of infield
- ▶ Edged infield crescent Irrigated infield as needed
- ▶ Sprayed Revolver to remove rye from outfield week after playoffs ended
- ▶ Core aerified outfield (4" deep) 3 directions
- ▶ Deep tine aerified outfield solid tines (6" deep)
- ▶ Topdressed with utility sand (22 tons/acre)
- ▶ Irrigated outfield as needed 2 times a week, 30 minutes a zone
- to equal 1 inch of rain per week. (Adjusted according to rainfall amounts measured at field rain gauge)
- Games = 3**3 games played in the mix of 5 plus inches of rain

JUNE 2016

- ▶ Took soil sample
- ▶ Verticut outfield, blew and removed excess clippings
- ▶ Core aerified outfield (4" deep) 3 directions
- ▶ Topdressed with utility sand (22 tons/acre)
- ▶ Sprayed Liquid Nitrogen, Hydro Turf, Bio Turf, Bovamura to promote bermudagrass (.5 lb. N/1000 sq. ft.)
- ▶ Used walk-behind tiller in areas with dead rye mat to encourage lateral growth of bermuda
- ▶ Applied 32-0-5 (1.3 lb. N/1000 sq. ft.)
- ▶ Mowing grass daily at 1 inch
- ▶ Irrigated outfield as needed 2 times a week, 30 minutes a zone,

to equal 1 inch of rain per week. (Adjusted according to rainfall amounts measured at field rain gauge)

JULY 2016

- ▶ Core aerified outfield (4" deep) 3 directions
- ▶ Sprayed Liquid Nitrogen, Hydro Turf, Bio Turf, Bovamura to promote bermudagrass (.5 lb. N/1000 sq. ft.)
- ▶ Used walk behind tiller in areas with dead rye mat to encourage lateral growth of bermuda.
- ▶ Deep tine aerified outfield solid tines (6" deep)
- ▶ Took soil sample
- ▶ Applied Lime (33.25 lb/1000 sq ft.)
- ▶ Inspected irrigation heads and raised heads as needed
- ▶ Sod cut infield; moved sprigs to bare areas
- ▶ Irrigated outfield as needed, 2 times a week, 30 minutes a zone, to equal 1 inch of rain per week. (Adjusted according to rainfall amounts measured at field rain gauge)
- ▶ Mowing grass daily at 1 inch

AUGUST 2016

- ▶ Mowing grass daily at 1 inch
- ▶ Irrigated outfield as needed, 2 times a week, 30 minutes a zone, to equal 1 inch of rain per week. (Adjusted according to rainfall amounts measured at field rain gauge)
- ▶ Routine daily maintenance of infield
- ▶ Used walk-behind tiller in areas with dead rye mat to encourage lateral growth of bermuda

SEPTEMBER 2016

- ▶ Mowing grass daily at 1 inch
- ▶ Repaired hydraulic head in outfield
- ▶ Repaired and replaced heads in skinned area of infield
- ▶ In preparation for overseeding: core aerified outfield (4" deep) 3 directions; verticut outfield & blew and removed excess clippings Sports Turf Crew finished overseeding with perennial rye at a rate of (8lbs/1000 sq. ft.) 3 directions

OCTOBER 2015

- ▶ Sod cut edges for Alumni Game
- ▶ Disconnected and winterized irrigation system
- ▶ Mowing grass as needed at 1 inch

NOVEMBER 2015

- ▶ NC/SC STMA Conference
- ▶ Most November Rain on Record
- ▶ Mowing grass as needed at 1 inch; struggle to get fields cut due to cold and rain
- Serviced mowers

DECEMBER 2015

- ▶ Mowing grass as needed at 1 inch
- ▶ Applied 24-5-11 (.84 lb. N/1000 sq. ft.)
- ▶ Applied 0-0-60 (.50 lb. K/1000 sq. ft.)
- ▶ Installed onsite weather station
- ▶ Lined off field for region umpire clinic /ST/

2018 STMA CONFERENCE REGISTRATION NOW OPEN



Registration to the STMA Annual Conference opened October 1. The 29th annual event will be held January 16-19, 2018 in Fort Worth, TX. Register online for a streamlined process and a lower price.

STMA offers a full Conference registration for \$375 that includes all education sessions (except optional activities with fees), the Welcome Reception, the Awards Banquet, trade show admittance, meals, and online access to the recordings of all Conference learning sessions. This price is only available if members register online. If more than one person from the same facility registers, there is a \$50 discount for each additional registrant.

STMA also offers complimentary Conference registration to new members who are defined as never having been an STMA member, or a nonmember since 2000.

Other registration options include a trade show only pass for \$50 that allows entrance to the exhibition on January 18 and 19. One-day packages to all the education and expo events each day can be purchased for Wednesday or Thursday for \$150 per day.

To view the complete schedule of events and sessions' details, go to STMA.org. To register go to STMA.org, log in and go to the Membership, Merchandise and Registration link in the left navigation column. Choose your registration option and follow the prompts.

Refer a new member* — receive \$100!

urrent STMA members who refer a qualifying, new STMA member* receive \$100 per referral. This reimbursement may be used to defray your membership renewal, Conference registration, and certification fees.

Promote STMA membership to your chapter members and remember to remind them to list your name as the person who referred you. There is not a limit to the number of referrals you can make. Refer four people and your Annual Conference registration is paid!

This program recognizes your efforts to support STMA through a strong and growing membership base. In 2018, sports turf managers will pay \$130 in annual dues; the Sports Turf Manager Associate (who is also a voting member, but is the second member from the same facility) will pay \$85 in annual dues.

STMA will begin its renewal process in October for the 2018 membership year. Look for an electronic invoice soon. STMA's processes allow for you to pay your national dues, chapter dues, certification fees, and conference registration together.

*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 qualifying, new member.



From STMA's Historical Collection. This is an early artificial turf installer attachment, possibly one of the first rollers, designed by David Frey, Cleveland Stadium, and STMA's President from 1983–1985. Frey designed this for tarp rolling, but it gained acceptance in the artificial installation industry.

Project EverGreen, Exmark, STMA, and SAFE team up again

Project EverGreen, in partnership with Exmark Manufacturing, the Sports Turf Managers Association (STMA), and The Foundation for Safer Athletic Fields for Everyone (SAFE), is once again sponsoring the "Our Winning Green Space" contest.

The contest gives municipal parks and recreation and public works departments, and non-profit agencies a chance to win a top-of-the-line Exmark Lazer Z X-Series mower package, valued at approximately \$15,000, and a "Healthy Turf. Healthy Kids." renovation project for their city.

Last year's winner was In Memory of Community Garden and the Warrendale Community Organization in Detroit. These two non-profit organizations, headed by Joe and Barb Matney, work with the City of Detroit to transform vacant city lots into community gardens and "pocket parks."

"We feel very blessed to have won the Project EverGreen 'Our Winning Green Space' contest," says Barb Matney, In Memory cofounder. "The mowers have allowed us to maintain vacant lots and to create safer, more accessible and much-needed outdoor gathering spaces for neighborhood kids and their families to enjoy."

Eligible parties can submit an essay and photos online declaring why their city deserves the new equipment and renovated playing field, and how it will assist them in maintaining a healthier, safer area for kids to play. Submissions can be made at www.ProjectEverGreen.org from October 1 through December 15, 2017, and the winner will be announced in January 2018.

"Project EverGreen is pleased to partner with Exmark and STMA on this opportunity to raise awareness of our "Healthy Turf. Healthy Kids." program and the importance of safe, grass playing fields and pocket parks for kids," says Cindy Code, Project EverGreen executive director. "The transformational value of healthy, green parks in neighborhoods cannot be underestimated."

Launched in 2015, "Healthy Turf. Healthy Kids." has completed renovation projects covering more than 1.6 million sq. ft. of recreational and athletic green space, generating more than \$1 million in in-kind donations, in East Harlem, NYC; Hazlet, NJ; Houston, San Antonio, Round Rock and Ft. Worth, TX; North Chicago, IL; Cleveland; Durham and Greensboro, NC; West End, WI; Ashland, OR; and Minneapolis.

Jimmy Simpson, Certified Sports Field Manager and STMA Board Member, also views HTHK as a way to educate the public on the importance of safe athletic fields. "Our partnership with HTHK helps parents, field users and fans to understand that a well-maintained surface helps to protect athletes from injury. Exmark's generous mower package will greatly assist with essential ongoing maintenance to keep the surface safe."

For more information and complete contest rules, visit www. ProjectEverGreen.org.





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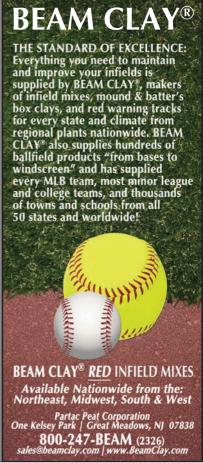
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STMA Affiliated Chapters Contact Information

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, Dale Croft, dale.croft@ocps.net

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:

www.stmalabasin.com

Illinois Chapter STMA: www.ILSTMA.org

Intermountain Chapter of the Sports Turf Managers Association:

http://imstma.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

Mid-Atlantic STMA: www.mastma.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.stmony.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

Chapter Sponsors









Continued from page 50

infill depth and surface hardness, it's imperative that the infill depth be measured regularly. An infill depth gauge costs about \$30. Infill depth should ideally be at least 1 ¼ to 1 5/8 inches deep. Definitely no less than one inch in depth.

Both ASTM and the Synthetic Turf Council recommend testing infill depth on the field in several locations, as well as inlays, painted lines, seams and high traffic areas like lacrosse creases. If the infill depth is less than 1 inch in depth, it can increase surface hardness. A second problem arises if the field is old and the turf fibers are worn down. If fibers are not long enough to top-dress, it's impossible to add more infill. This may have been the case in California.

A third scenario I have encountered first hand, mostly in the urban environment, is that the fields get clogged with silt blown in from the local environment, particularly if there is construction nearby. The silt and other fine mineral particles can settle down in the fibers and create a hard compacted layer.

This brings me to my last suggestion. About half way through the field's life, if Gmax readings are indicating a field hardness issue, it's possible to have a full depth renovation. This involves removing most of the infill, deep grooming and replacing with new infill. One company who does full depth renovation uses high-pressure air to blast the infill out, which is then vacuumed up. This procedure can generally lower the Gmax value by 30-40%. One example given was a Gmax of 176 lowered to 144. Given the age of the field in California, I don't believe this would have been the most economical option, even if the turf fibers were in good enough shape and deep enough to accept infill, which I doubt.

In summary, monitoring Gmax and infill depths and carrying out regular maintenance will prolong the life of the field and keep it safe for the athletes. At some point though, the field will still come to the end of its life, either by being worn out or by exceeding the Gmax limit. The goal then is to plan for that happening and to have a budget and a strategy in place so that it doesn't catch anyone by surprise. /\$T/

Thanks to Don Follett, Senior Director of Field and Grounds at The Baltimore Ravens, and to Allen Verdin from The Motz Group for their insights. Photo of Brian Gimbel taking infill depth measurement taken by Pam Sherratt.



0&A with **PAMELA SHERRATT**

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Questions?

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Quick fix for unsafe field?

An email came across my desk in August, sent from a gentleman in California whose local high school synthetic football field was deemed too hard. It had failed nine out of ten field hardness tests and so had been taken out of commission for the fall playing season. This had caused some ripples in the community. The field was 11 years old and the questions were: Was it possible to rip out the synthetic and install a grass field in time to save the season? And what would that entail?

■ My initial response is yes. It's always possible to rip out the field and replace it with a natural grass field, but that's not a quick or cheap fix. It would involve removing 0.5 millions lbs. of sand and crumb rubber infill and finding somewhere to accept it as waste, removing the carpet and gravel base, salvaging or installing irrigation and drainage systems, bringing in new rootzone material, grading it, and covering it with thick-cut sod. The timeline for this would depend upon many factors, like availability of local field construction companies and availability of thick-cut sod. The renovation would take several weeks, cost a lot of money and might only result in a couple of saved games.

Looking at this problem a little deeper, it would have been good to know why they wanted to remove the synthetic field. Is it because players and staff prefer natural grass? That was the case for the Baltimore Ravens where the team (and field manager Don Follett) voted to switch back to natural grass in 2016. Don felt, as I do, that the improved turfgrass varieties available now, plus advances in

technology and maintenance equipment, means that natural grass fields could be very successful, regardless of local environmental conditions. If that is the case in the CA situation, a natural grass installation should definitely be planned and budgeted for, especially since the field is 11 years old and has come to the end of it's life anyway. But if they really like the synthetic and are only looking at this option because they want a quick fix this fall, maybe replacing just the carpet and infill is the better option. It would still take time to rip out and dispose of the infill and carpet, then 2-3 weeks for carpet manufacture and two to three weeks for installation. The field's age and its being too hard for safe play means both of these options need immediate, deep discussion. Both options will be costly and will need to take into consideration school preference, field usage and available resources.

In retrospect, it would have been easier to monitor field hardness and have those conversations when the field was 5 or 6 years old, or mid-life. Regular annual or bi-annual Gmax testing with either the F355 (Gmax <200) or Clegg (Gmax <100) would have shown the increase in field hardness before it was too late to do anything about it. There are also recommended maintenance procedures to prevent and control field hardness. Regular grooming and periodic topdressing with fresh infill material are both key operations. Keeping infill levels at the correct depth is safer for players and extends the life expectancy of the field by a couple of years. Since there is such a strong correlation between

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