

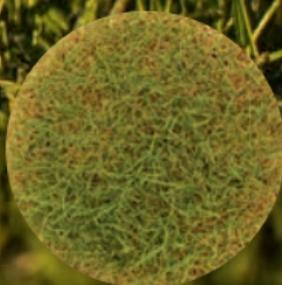
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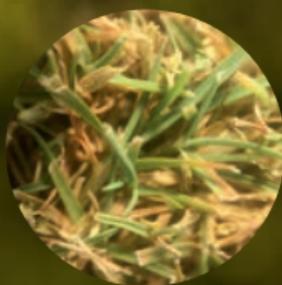
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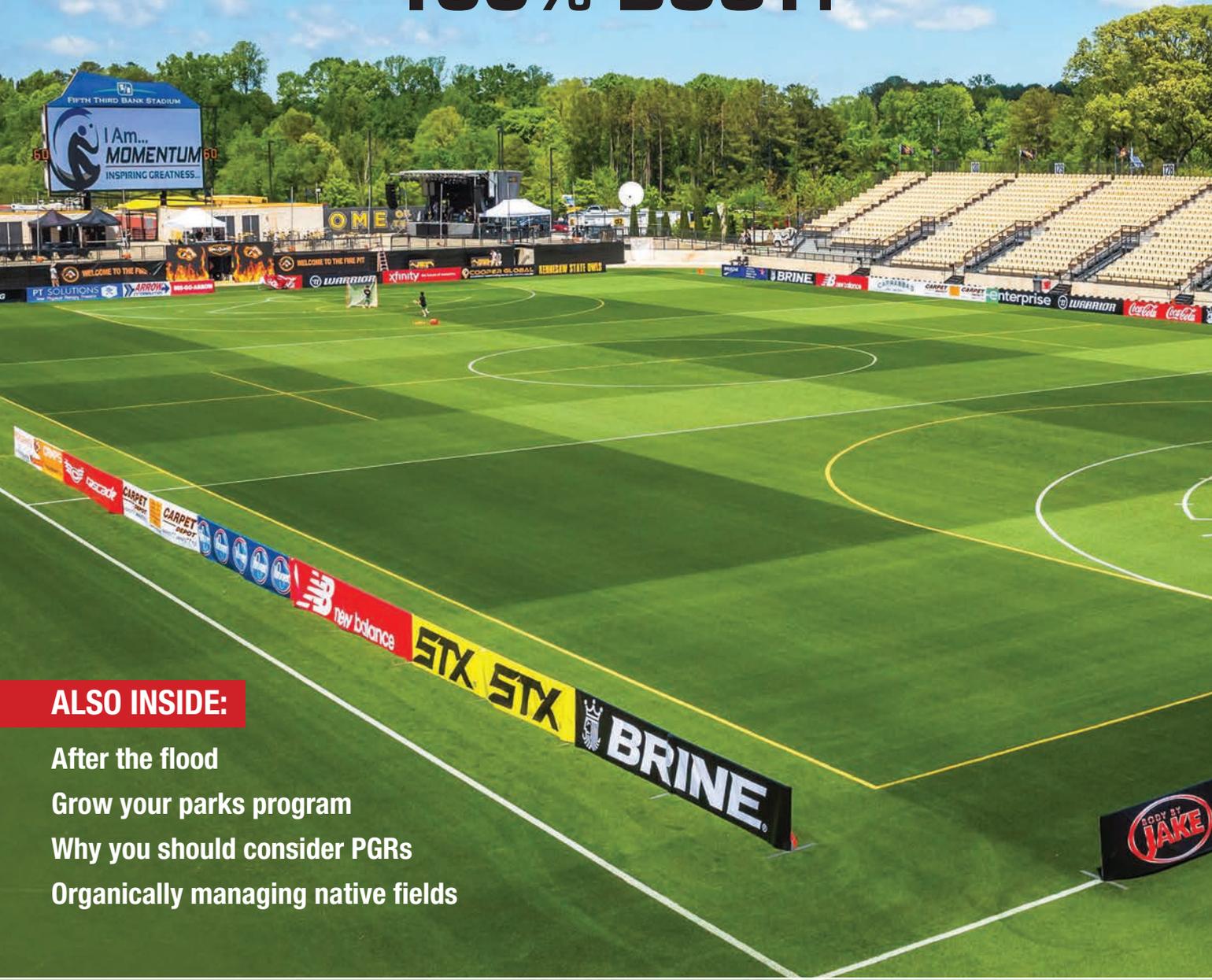
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ON THE COVER: "The biggest challenges we face are scheduling, communication and weather. I believe these three things go hand in hand. Our field is in constant use from athletic events, band practices, cheerleading practices, commercials, photoshoots, corporate events, concerts, etc."- Shane Hohlbein, CSFM, 2016 College Sporting Grounds Field of the Year recipient.

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Eric Schroder
Editorial Director

Eschroder@epgmediallc.com
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WHY ARE HIGH SCHOOLS GOING SYNTHETIC?



This \$64,000 question (\$581,738 today with inflation and for those of you not around in the 1950's) was asked of Dr. Andy McNitt of Penn State and Dr. John Sorochan of the University of Tennessee at the Opening General Session of STMA's Conference in January.

Imagine my chagrin when Dr. McNitt began his response by sharing a photo that represented an example of a poorly designed and maintained high school (natural) field and I recognized it as the one on which my high school senior son is playing baseball this spring (but that's another column)!

Dr. McNitt said that of course with proper construction and maintenance high schools could have great natural fields but that athletic directors typically don't want to have to worry about field conditions. Many districts don't have the personnel, money or knowledge to pull off having great natural turf, and often when districts build new fields, they want to keep the spending local so they end up working with architects and builders who don't know what they are doing when it comes to athletic fields. And it's tough enough for most ADs to schedule these days with all the sports competing for field time, he said, and then re-scheduling rainouts, etc.

Add to this the synthetic turf companies' marketing to district superintendents (and architects) that their products will "solve these problems," Dr. McNitt said. Then administration tells taxpayers "synthetic will save money and it's safer" when the real reason is that administrators won't have to think about the fields if they're synthetic (not getting into that they need regular maintenance here).

He suggested that turf managers looking for more money for their natural fields create one showcase field instead of spreading budgets around to all fields to show administrators and coaches what is possible with good resources. He added that sodding should be considered a maintenance practice these days, where a quality guarantee can be expected from the sod farmer.

When the issue of what fields are we going to have comes up at your district, the person actually managing the project is whom you need to give your input to directly.

Dr. McNitt recommended that the sports turf maintenance industry create specs like the USGA Green Section does, including tips for success, construction standards, etc.

Dr. Sorochan said, "Keeping up with the Joneses" was a big reason high schools choose synthetic, and that another issue was the increasing number of pesticide bans being enacted around the country. "There's no science behind it," he said, "it's all politics, it's perception versus reality." He cited the example of Acelepryn insecticide, used for grub problems, which has no label from the EPA yet has been banned by law in some areas.

An interesting point was made by an audience member during this discussion—just how terrible the "green industry" is at marketing itself. "Look at all the acres of green that are being lost to synthetic turf," he lamented.

There are resources available for you to get non-alternative facts about why and how natural turf fields can work for the student athletes in your school district, and there is no one better suited to deliver this information to administration and the public than you.

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EPG Media & Specialty Information
 10405 6th Ave. N., Ste 210
 Plymouth, MN 55441

The Official Publication Of
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SALES REPRESENTATIVES

Chris Pelikan
 Senior Account Manager - East
 Phone: (763) 383-4460
 cpelikan@epgmediallc.com

Peggy Tupper

Senior Account Manager - Midwest
 Phone: (763) 383-4429
 ptupper@epgmediallc.com

Leslie Palmer

Senior Account Manager - West
 Phone: (763) 383-4460
 lpalmer@epgmediallc.com

EDITORIAL

Group Publisher: David Voll
Editorial Director: Eric Schroder
Technical Editor: Dr. Joey Young
Art Director: Jean Blackmer
Production Manager: Angela Scott

SUBSCRIPTION SERVICES

Phone: (847) 513-6025
 Fax: (763) 383-4497
 customerservice@epgmediallc.com

REPRINTS

Robin Cooper
 rcooper@epgmediallc.com

GROUP PUBLISHER

David Voll
 dvoll@epgmediallc.com

DIRECT MAIL LIST SALES

MeritDirect, Jim Scova
 Phone: (914) 368-1012
 jscova@MeritDirect.com

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STMA OFFICE

805 New Hampshire, Suite E
Lawrence, KS 66044
Phone: 800-323-3875
Fax: 800-366-0391
Email: STMAinfo@STMA.org
www.STMA.org

STMA Editorial Committee

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Tim Van Loo, CSFM
STMA President
vanlooti@iastate.edu



ARE YOU HEARING ME?

Spring sports are in full swing and even we Northern people are coming out of hibernation to do some outside work that does not include a snow shovel! The grass is turning green and the smell of fresh-cut grass is everywhere. The spring is one of my favorite seasons; I think it is because of the anticipation of everything that we prepared for during the winter months. Like any good coach, there is a time for planning and scheming, and then there is a time to go out and execute. I suppose I am one who gets more excited about executing the game plan vs. all the time thinking about it. Games have always been more fun than practice!

I titled this message "Are you hearing me?" because I want to address something that seems to come up every day of my life, and I am sure all of you fall into the same situation often enough to frustrate you at times. Communication is something we all do; it is not something that comes naturally for many of us. I heard or read the following statement and am amazed how well it holds true: "95% of all problems are related to a communication error." For some reason the statement has been something I have been frequently reminded of, and usually not in the positive.

With today's technology and fast moving communication, it seems that tone and clarity seem to be the biggest issues. I am one who tries to communicate as efficiently as possible, meaning that I try to use the least amount of words as possible to get to the purpose of my message. Sometimes that keeps me out of trouble, but in many situations, it can communicate the wrong message. Text messages and emails seem to

be the biggest communication failures. I simply want to encourage all of you to try to think about the message that you are typing, and think about all the possible ways the information you are trying to get across could be taken differently than you are intending.

Words spoken seem to be clearer than words typed!

The biggest thing that I have learned, if a conversation potentially could be taken the wrong way or you are addressing an issue that may be difficult, if you can have a face-to-face conversation, you should do so. If that is not possible, I would encourage you to use your phone for its intended purpose, and call that person directly to try to eliminate a potential communication error. Words spoken seem to be clearer than words typed!

I wish all of you the best of luck in your spring seasons. I hope all of you have timely rains and sunny game days. I also hope that some potential problems do not ever become real problems because you took the time to be clear with your message and communicated clearly to avoid mistakes. If there is anything the STMA or I can do for you, please do not hesitate to pick up the phone.

  @cycloneturf



GOING ORGANIC WITH NATIVE SOIL FIELDS

■ BY JOHN COGDILL, CLIA

Boulder City Parks has always been aware of the need to try and promote turfgrass vitality and keep fields safe for play, integrating everything from Sports Turf Manager Association safety checklists while applying the least amount of chemical intrusion possible (IPM).

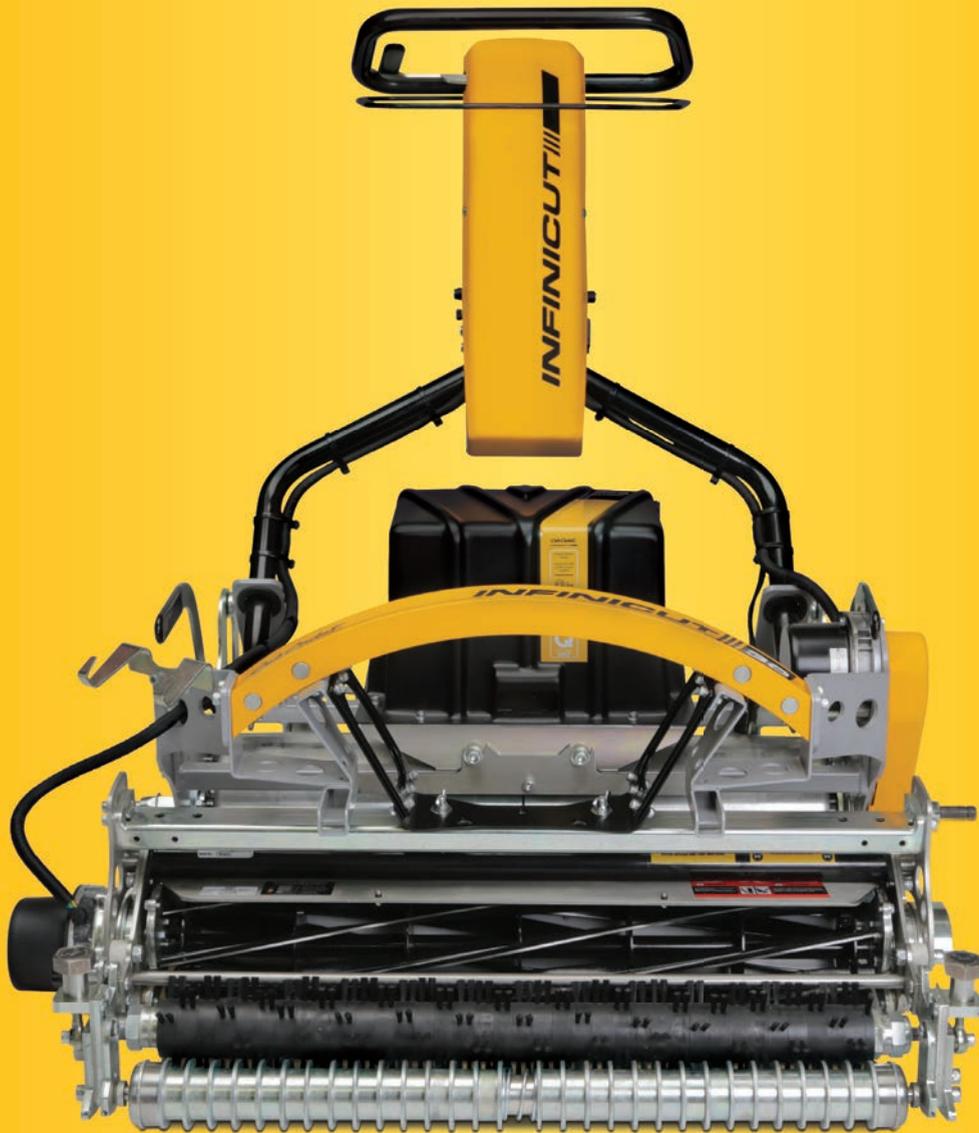
We have been without the use of pesticides since early 2000. What follows seems relevant and speaks to the reasoning behind current methodology. In June 2011 Fox News published the following:

“Research conducted by the Centers for Disease Control and Prevention found the residue of numerous pesticides in the bodies of 15% of children tested, ages 3 to 7. What’s worse, the broken-down products used in organophosphate pesticides was



detected in 98.7% of children studied. Some of the chemicals used in lawn “weed and feed” products, such as the herbicide 2, 4-D, can be very toxic even at low doses and may increase the risk of cancer, neurological and reproductive problems. When brought indoors on clothing, 2, 4-D can remain in carpets for up to a year.”

That being said, our organic approach has been sustainable and effective for our both our constituents and for our native soil fields. In early 2014 Ross Kurcab from Championship Sports Turf Systems analyzed and provided our foundational turf plan, which has worked well as we continue to evolve and expand both our product research and accepted BMP’s. Our organic program is typically slightly more expensive to operate than



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other more traditional programs, as synthetic fertilizer costs are typically less expensive than organic fertilizer. However, as we don't pay for contracted pesticide and herbicide services the cost relationship might not be as dramatic as many might suppose.

Our organic programs also typically require a greater level of time investment as it relates to cultural programs, seed, topdressing etc. However, field use and hours of play are also at the forefront of this demand our quest for cost recovery. Our costs are not prohibitive, particularly as one realizes that our community places a very high value on the health/safety of our fields and that we take very

seriously our responsibility to our constituents, in particular as it relates to pesticides and the level of public trust that we strive to maintain. It is also important to understand that our climate plays a large role in our ability to do this, and we are not faced with challenges such as a year round growing season and the humidity that much of the country endures.

SOILS

Boulder soils are unique due to the amount of heavy clay, Bentonite and slowly disintegrating limestone deposits that exist. Soil testing has shown that we have nearly every type of soil and pH within range with heavy clay or clay loam being our primary structure. Our native soils have relatively large amounts of potassium that occur naturally for the most part.

Boulder soils hold Phosphorus well and we have been very aware and careful about adding additional P unless the soil test reflects this. We are concerned about excess P and the effects of runoff as well as potential leaching in soils that are of a sandy or sandy loam structure.

Boulder soils principal need is nitrogen and on our native fields we try to deliver between 3-5 lbs. of actual N per thousand. The typical field soil is below 5% organic matter in our area and the addition of organic compost and fertilizers help to support this need and provides increased soil tilth in nearly all instances.

We use various types of fertilizer injectors to apply liquid organic formulas; granular fertilizers applied by spreader and tractor is the norm for us. Compost is routinely applied to specific sites based upon soil test results and the level of use/play experienced.

Multiple applications of N in 1-1.5 lbs. per thousand usually

beginning after the ground thaws in late March or early April and completing our fertilization programs in late September or very early October prior to any ground freezing and usually as the first frosts arrive. This schedule gives us the best in terms of soil

temperature, which is necessary for optimum results when using organic fertilizers.

We conduct soil tests annually on our premier and satellite athletic fields and apply 3-5 times per year based upon individual field needs. Both OMRI certified and non-certified products are used.

One of the larger challenges that we face is that of former methods of construction in new field development from 10-20

years ago. Soil that had been brought in from other sites and sold as topsoil resulted in additional challenges as it combined with our heavy existing native soils. Typically, this material was just taken from a building or new development site, mechanically screened removing rocks and various other organic debris and spread over a new field site. This soil is basically devoid of any microbial life, low in organic percentage and was not adaptable to the existing subsoil. This in turn created drainage challenges and the greater need for additional organic matter.

Over the course of time the soil structure has been modified, largely through cultural methods and now supports an improved soil structure, which encourages plant growth. Another example and challenge for us is the amount of rock and basic pit run soils that currently exist and the corresponding challenge of managing their soil tilth. Our organic program has had a positive and noticeable effect on improving these challenges as well, particularly as it relates to water holding capacity. Cultural practices and compost along with other practices such as leaving the mow clippings have over the process of years modified these rocky and sandy type soils.

CULTURAL PRACTICES

Core aeration, topdressing, seeding and using our recycler dresser are all integral parts of our organic turf program. We have found that given a positive and proper environment with our fields, turfgrass for the most part will outcompete any weeds that we have. This may require more frequent mowing and increased fertilization based upon test results. But for the most part our fields remain looking good with very dense stands of grass, which take care of our primary field criteria concerns and alleviate the need for pesticide applications.



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Select seed varieties are chosen from the top performing varieties out of recent NTEP trials. New seed polymer options are not used, and we do inquire as to whether the seed is neonicotinoid-free.

Current mowing practices at our athletic fields is to cut at 2-3 inches predicated on what sports are being played on them. Blades are sharpened often which in turn helps reduce leaf shatter and that potential for disease and has actually saved on our fuel consumption. Mowing frequency occurs anywhere from 1-4 times per week and is dictated by growth, never removing more than 1/3 of the leaf blade at any given time. We typically see on our premier field grass growth rate of about 1/2 inch per day during optimal late spring early summer conditions. Once temperatures rise above 95 our bluegrass tends to not grow quite as fast.

Core aeration is done 1-5 times per year and more frequently as needed, based upon levels of compaction and field Clegg results. There is definitely a need for increased cultural practices with an organic program and the effects of completing this work or not, is always quite evident. Our typical practice is to core aerate, overseed and topdress

with compost on native soils. We will core aerate goal areas and other high use areas as often as every 10 days during heavy play. These areas are then overseeded and drug, raked in or swept depending on the existing soil structure.

Native soil fields always have the cores left on them and are either drug after seeding and composting or left to dry and then mowed. Aeration holes are typically half inch to 5/8-inch circumference at 3-4 inches depth and 2 inches on center. Our recycle-dresser is typically set at 6 inches, again depending upon the soil structure followed by seed and a field drag. Depending on the existing turf density we will likely change direction and repeat in scarcely covered areas. What we have found consistently is that the scarce and weed infested areas are typically also the areas that will fail field hardness standards and will require additional efforts in order to be brought into compliance. Typical overseed rates are at or about 4-5 lbs. rye and 4-6 lbs. bluegrass. Premier fields are at about 5-7 lbs. applied per thousand.

Topdressing is a year round practice particularly at our high use and fields testing at low OM in order to improve soil tilth and provide the environment that is capable of out competing weed



challenges. Topdressing typically follows heavy aeration and seeding and the compost product that we use is inspected by the Colorado Dept. of Agriculture. The compost is well aged, friable and free of large chunks, weed seed and excessive salt. We do not apply compost to sand-based fields.

WATER

Irrigation in the West and particularly in this area is of extreme importance in creating the appropriate environment for our organic program. Appropriate irrigation is critical to the organic turf program as either over or under watering creates issues of compaction and provides an environment where weed infestations can more easily thrive. As a matter of practice, irrigation audits

are conducted on native soil athletic field sites and soil moisture bucket schedules performed as the audits are completed. The high end ETO requirement for Boulder in the summer of 2016 was 1.66 per week. The need for highly efficient systems providing appropriate coverage is critical and the end game goal is for our system particularly our rotors to be at .8 Distribution Uniformity. Systems are checked weekly and

our central control system provides morning updates on high and low flow as well as, areas of catastrophic flow, which typically indicates a mainline break. We are currently in the process of converting fields from an ET base to one managed by soil moisture sensors all to better incorporate a system which speaks to organic health and vitality.

Whether it is fertilizer, pesticides or water any and everything can be used in a careless manner. Organic turf programs are always going to be scrutinized as they should be and thoroughly vetted to separate science from feeling or emotion. Our intent is to be objective by keeping good records, by soil testing, consistently in the field evaluating weed infestation, and demanding dense healthy safe fields for our patrons.

Our work is examined from the point of science and what works in the field. Research is always a huge part of what we do and we are constantly looking for new and creative ways to make this work better for everyone.

John Cogdill, CLIA, is assistant operations manager, Boulder Parks & Recreation, Boulder, CO.

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WHY EVERY SPORTS TURF MANAGER SHOULD CONSIDER PGRS

■ BY BEN POLIMER

I had the privilege to present on using Plant Growth Regulators (PGR) at this year's STMA conference in Orlando. I was very surprised with the response with a standing-room only crowd, and great questions from the audience.

PGRs have been used in the turf industry for many years but only recently in the last 10 years have taken off in the sports turf world. This is mostly due to the price; the trinexapac-ethyl (TE) patent ended a few years ago, making off-patent product affordable. I also think the fear of using these products has lessened with the increased use. For those who want to start slow with these products, consider using them in paint first. A gallon jug is inexpensive and will go a long way. More on using the products in paint later.

The idea of these products is to reduce growth. PGRs are classified into Type I and Type II. Type I are foliar adsorbed,

for example Mefluidide (Embark). Type II are broken into two categories, Class A, which are foliar absorbed and gibberellic acid is inhibited late in the process. Examples are trinexapac-ethyl (Primo) and Prohexadione calcium (Anuew).

Type II Class B products are root absorbed and gibberellic acid is inhibited early in the process. Examples are Paclobutrazol (Trimmit) and Flurprimidol (Cutless). Most of my experiences are with Class A products, and I think sports turf managers unfamiliar with the use of PGRs should use Class A products to start.

PGRs are great products but they are never a substitute for good agronomics. PGRs should never be applied when turf is stressed! Do not apply them to dormant turf.

Using growing degree days (GDD) has become a new, very good tool for application of all kinds of turf protection products. Using GDD for PGR use is a great way to predict timing for reapplication, and not potentially having a rebound when you don't want it. I don't use GDD for PGR application for many reasons, including that I don't own a sprayer, so I rely on a

contractor to come; also MA state laws restrict EPA-labeled product application when school is in session. I normally don't apply any products during the school year. I wait for school vacation weeks or the summer. If you want more information on using GDD, I highly recommend Dr. Bill Kreuser's work at University of Nebraska-Lincoln, <http://turf.unl.edu/highlighted-research#regulator>

There are up to 10 benefits using PGRs in your program. They are different for every turf manager and every facility. According to Pamela Sherrat and Dr. John Street of Ohio State, benefits include:

- Reduce clippings
- Enhance color, texture and density
- Extend life of painted lines
- Prevent tissue elongation
- Increase sod strength and divot resistance
- Better fall color and spring green up
- Wear tolerance and recuperative potential (rebound)
- Improved drought and heat stress tolerance
- Improved shade tolerance
- Increased root length and mass



Poa annua off color on Gaskill Field, Worcester Academy, Worcester, MA



After my first PGR application at Worcester Academy

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Water drainable glue-down surfaces are desirable for:

- Synthetic turf athletic fields
- Rubber/urethane running tracks
- Playground surfaces - synthetic turf and rubber/urethane
- Artificial turf near airport runways



Timing the rebound from PGR usage to combat intense traffic, Early October 2015, Gaskill Field, Worcester Academy, Worcester, MA

Most of my PGR usage has been with TE and on cool-season grasses, mainly Kentucky bluegrass/ryegrass/[START ITAL]poa annua[END ITAL] mixed sports fields. Usually I am applying TE with a “cocktail” of other products like insecticides, wetting agents, and herbicides. When applying TE, expect a 50% growth reduction in 3-5 days after application. Discoloration will happen! It will dissipate and then in subsequent applications the turf is used to the application and will in turn be darker.

Reducing vertical growth in turn increases density. Mowing alone will not replicated the density of turf without the application of TE. It’s noticeable to the novice.

Extending the life of paint lines might be a great starting point for the sports turf manager with little to no experience with using PGRs. I recommend halving the rate of the label of TE and mixing it with your bulk paint. Paint with PGR can be used every 3 to 4 weeks and will help keep lines. It can reduce the need for restringing during off periods.

Can it work to hold logos in between home games? Will it hold numbers and hashes on a football field in between home games? I caution using TE in wheel-to-wheel painters. Play with the rate. It’s a great tool, I highly recommended it.

If you use growth covers, flooring, or other types of coverings on turf, you can use TE to “pre-condition” the turf. Reduce the growth while under the cover and time the “rebound” when the covering comes up. A Penn State study concluded that a sand-based rootzone can reduce divot size by 10-20%. In a native-soil field the divot size can be reduced by 10%.

TE applications early in the spring and late in the fall can help with better spring green up and better fall color. I have done applications late in the summer and it seems to hold color longer in those cool nights of the fall. With my application restrictions in Massachusetts, I have not done a fall application. I have seen painted lines in the fall green up faster than the surrounding turf.

Besides the use of PGRs in paint, using the “rebound” effect, the regrowth of the turf plant coming out of suppression, can be the turf manager’s best friend. Even if you have a field not used in



Controlled growth, excellent turf density from monthly PGR applications, Deborah Sampson Park, Town of Sharon, MA

the spring or summer (football only) the field under suppression all summer long. Time the rebound when games start in early September. “Growing out” damage can help get through the tough season. If fields are not used in the summer, and mine are not, we apply PGRs in summer to reduce mowing. I time the last application to help “grow out” damage from fall soccer.

Other advantages with using PGRs include reduced turf decline from both tree and stadium shade. This makes sense when reducing vertical growth. There has been mixed findings on increased root length and mass on cool-season turf, according to Sherratt and Street. Bermudagrass has shown an increased root length and mass.

I did not have great success with this product, but there is one on the market for reducing trimming around trees and fence lines. I thought it was very expensive and didn’t perform that well. Granular PRGs are still around and do have some application in small areas like lawns, youth baseball infields, or anywhere were spraying might not work. **SI**

Ben Polimer is fields and grounds coordinator, Town of Weston, MA and vice president of the New England Sports Turf Managers Association.

John Mascaro is President of Turf-Tec International

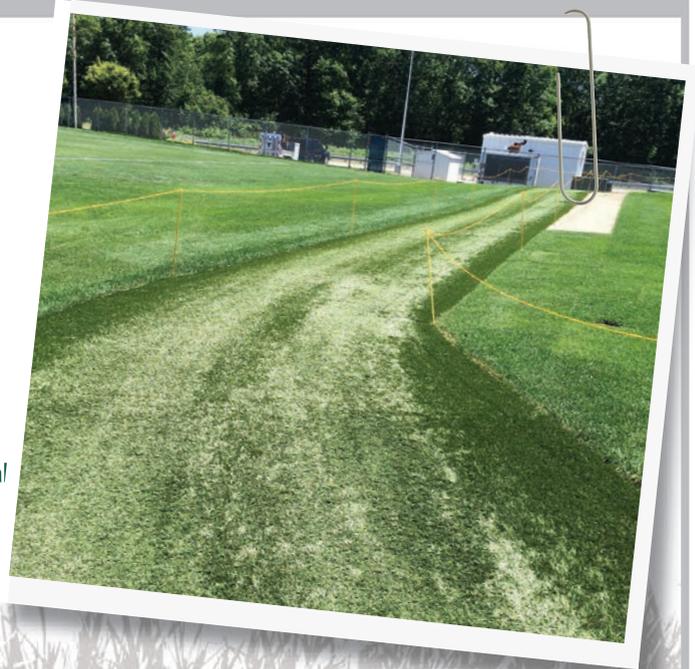
Can you identify this sports turf problem?

Problem: Roped off area is worn but green

Turfgrass area: NFL practice training fields

Location: Foxborough, Massachusetts

Grass variety: Kentucky bluegrass and artificial



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NOTES FROM SUSTAINABLE PARK CONSTRUCTION SITE

■ BY RICHARD CALARCO, CSFM, CRPA, AOLCP

The Town of Hebron, CT population 10,000, located about 20 miles east of Hartford, is committed to maintain its rural features. This commitment is demonstrated by the Town's open space fund that enables the town to purchase land when it becomes that is outline in its plan of development. Using these funds the Town purchased the 170 acres that became Burnt Hill Park. The Town encourages sustainability, while maintaining our rural character. This was demonstrated right from the initial purchase as the Town worked with the Connecticut Department of Energy & Environmental Protection (DEEP), when it purchased the property setting aside more than 40 acres of the park dedicated for passive use.

The Town initially hired a consultant to develop an overall master plan for the site and determine the Town's needs.

Based on this master plan I was charged to develop a park that had athletic fields, trails and rural character

of the town, using as many town local resources as possible. To accomplish this goal the Town staff planning group, which included a Town planner, building official, conservation office and me (parks director). Each of us served as our point of reference to the land commission for parks and recreation, planning and zoning and conservation. This design team works with our consultants, Nathan I Jacobson & Associates, Richter and Cegan Inc., and TLB Architecture, LLC.

The existing site conditions reveal past and present agricultural use. A portion of the site was used for a cultivation of feed corn and an egg production farm. The site is surrounded by farm preservation land to the north, State of Connecticut Open Space to the east and private farmland to the south.

As our plans began to formalize we looked at some of our needs, including fill for the site. We learned of several sites in Town that had extra material from construction and we used this material for the park. Working with our Public Works department and our parks staff we began to stockpile the fill on site.

As previously stated, the site was an active egg production site to house this operation. Using, the design team planned the park operations facility using one of the egg production

buildings for the park operations base.

The buildings were knocked down and the local fire department scheduled a drill for our volunteer fire crew to burn all the wooden structures. The metal was recycled in conjunction with the Town's recycle operations. The concrete from the egg buildings was grounded into process gravel for our road base. One of the concrete bases was saved to be used as the base for the parks operation building and a material storage site.

At this active egg farm, our engineer team worked on storm water management as well as with Dr. William Dest, a retired University of Connecticut professor [and STMA member], to develop an under drain system for all our athletic fields. Once our drainage system was complete and rain gardens were added, we would reduce the storm water discharge from the site from when it was farmland.

The Town encourages sustainability, while maintaining our rural character.

The next design was to take into account the site opportunities and constraints with the historical use of the property. As part

of our master design, we hired a soil consultant who evaluated all our wetlands and opportunities for wetland enhancement. The question was how to best enhance our wetlands and all for the public to be able observe the areas. Our planning used this information to develop cultural buffers to sensitive areas and minimize disturbance of forest area and used the existing ponds for the athletic field's irrigation source. Our final plan designed to balance the cut out fill to minimize the amount of material needed for the site.

We now moved to the landscaping aspect of the park and used rocks and stones we found on the property during construction. And reconstructed our historic stonewall at the front entrance. Our approach was to use all natural plants and to provide natural screening and separation form athletic fields, walkways and provide a natural buffer planting for our wetlands.

Our athletic fields and general lawn areas using NTEP selected grass that would take into account turf quality, drought tolerance, reduce fertility requirements, and disease resistance.

The final design enabled our park to be able to monitor key views to our surrounding area. A natural walking and trail using the wood chips provided by our public works and utility companies who clear trees in our town.

The site like any park, needed to provide auxiliary parking



for large special events. We had our contractor set up in this designated area. Using the tailing from the loam screening we developed a grass area parking lot with excellent drainage.

The next challenge was to construct the P & R office and operations in the egg production building. The maintenance building was designed with skylights for natural lighting and Solo tubes skylights where used in our restrooms building to bring in natural light as well.

Photovoltaic Panels were installed to take advantage of the solar power for the electric for the park building. Our recycle center takes waste oil from residents. Knowing this we designed our heating system to use waste oil burner to heat our park building. This not only enables us to not have a heating cost but also reduced cost to public works to have product removed from its site.

The final site of the Park building was designed to with

landforms, landscaping design to provide shade in the summer, sun in the winter and protection from the winds. Our final plans for the building was to have the office area be white and the park operation building to be red to match a farm approach of the white house and red barn.

As you can see, our final product met our goal of developing a park that took into account our community and used as much as of the material available in our community on our site. Our design team through the process followed sustainability by using the four interconnected domains as best as possible: ecology, economics, politics and culture. **ST**

Richard Calarco, CSFM, CRPA, AOLCP, is director of parks and recreation, Town of Hebron, CT.



AFTER THE FLOOD

Flooding events caused by excessive rainfall can be extremely detrimental to sports fields. Flooding saturates a rootzone and creates an unfavorable soil environment for root growth by displacing oxygen in the soil pores with water. Without oxygen exchange in the rootzone, roots stop absorbing water and nutrients. As a result, the turfgrass plants weaken and may die depending on length of submergence.

Turfgrass injury

Severity of turfgrass injury following a flooding event depends on water temperature, water depth, amount of time the turfgrass is submerged, and turfgrass species.

When submersion occurs together with high temperatures, plants can die quickly due to a lack of energy production to sustain plant growth. Cool water and cloudy days increase the chances for turfgrass survival. Research shows that turfgrasses can withstand submersion up to 60 days when water temperatures are 50 degrees or less, but can be killed within 24 hours when water temperatures are 86 degrees or higher.

Saturated soils may be the only concern with light flooding while leaves remain exposed to air. Turfgrasses with leaves extending above the water surface often survive longer than fully submerged plants. Submerged plants can be severely damaged or die due to low oxygen in the rootzone and low light reaching the leaves.

Turfgrass plants that are submerged for long periods of time are more likely to suffer damage or die. Stagnant water allows sediment to coat leaf blades increasing turfgrass injury when compared to moving water.

Different turfgrass species vary in submersion tolerance. Creeping bentgrass and bermudagrass are the most tolerant to flooding. Research shows that bermudagrass can survive after 55 days of submersion. Kentucky bluegrass and tall fescue are fairly tolerant to flooding. Research has shown that tall fescue and Kentucky bluegrass can survive after 35 days of flooding. Kentucky bluegrass rhizomes have been shown to survive flooding events and contribute to 50% of field recovery. Annual bluegrass and perennial ryegrasses are the least flood tolerant.

Flood recovery

After a flooding event has occurred, it is best to stay off fields until the soil can support clean-up equipment without rutting or promoting excessive compaction. This may require shutting down fields for a period of time to allow soil water to recede. Prevention of rutting and excessive compaction is better in the long run than trying to prematurely aid in water or sediment removal with heavy equipment.

Little can be done to assess field damage from submersion until floodwaters recede. Depending on the severity of the flood, turfgrasses may be dead or only suffer minor discoloration. Initial changes in color are most likely the result of limited oxygen availability for root respiration and the resulting impact on photosynthesis and/or limited light for photosynthesis if submerged for more than a day or so. In addition, flooding leaches nutrients, especially nitrogen, from the soil. A lack of nutrient uptake by turfgrasses may also cause discoloration of the leaves.

Soil erosion and sediment deposition also presents problems for sports turf managers. Soil erosion can occur when floodwaters flow rapidly in channels across fields. Silt, clay, sand, and debris can be deposited on turfgrass surfaces after

flooding events. Some turfgrass areas recover from flooding with very little input. In areas suffering from extreme flood damage, sediment removal, tillage, re-grading, and reseeding/sodding may need to take place.

The first priority for any flood damaged field is sediment and debris removal. Large pieces of debris deposited by floodwaters need to be removed.

Sediment should not be tilled into the top few inches of the existing rootzone. Although slow and tedious, removal of sediment deposits should occur as soon as possible to avoid immediate and long-term problems. Make sure the field is dry enough to support equipment and foot traffic without causing ruts and compaction. If the turfgrass remains buried for an extended period of time, lack of light and smothering can injure the plants. Deposition of less permeable clay or silt on top of existing soil can cause long term in filtration and drainage problems. Removing sediment from sand-based rootzones is especially important to prevent the rootzone from being capped by a clay or silt layer.

Equipment that can assist with sediment and debris removal includes the following: tractor with box blade; utility vehicles with trailers; hand tools such as at bottom shovels, brooms, and



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Soil cultivation

Once sediment is removed, field injury can be evaluated. Fields that suffered from extensive damage may need to be tilled, re-graded to the proper slope, then reseeded or sodded. Fields with less extensive damage can use soil cultivation to restore fields. Removing all traces of sediment deposition is very difficult; therefore, using various methods of cultivation to break through the remaining sediment layer can be helpful in encouraging rooting, turfgrass recovery, and water in filtration. Slicing or hollow or solid tine aerification can help dry fields, improve physical condition of the soil, and increase oxygen availability to the rootzone. Hollow tine aeration with core removal is the preferable method to aid in removal of additional sediment. When cores are not removed, the sediment is only being diluted with soil from the rootzone. Every effort should be made to avoid development of layers in the soil profile that might result from sediment remaining on the surface.

Topdressing after core cultivation can assist in leveling the turfgrass surface and further dilution of any remaining sediment. Topdressing also improves physical properties of the turfgrass rootzone. Topdressing material should match the particle size of the existing rootzone or be of a slightly coarser material.

Removing sediment from sand-based rootzones is especially important to prevent the rootzone from being capped by a clay or silt layer.

Note: Removing sediment layers less than one inch can be very difficult. After the layer dries out, a drag mat can be used to break up the sediment layer. Aggressive hollow tine aeration and topdressing can be used to manage the sediment and prevent it from clogging the rootzone.

Flooding will leach nutrients from the soil. Soil tests should be conducted following flooding to provide guidance for a successful fertilization plan when reestablishing turfgrasses. When submitting a soil sample for testing, be sure to indicate that the sample is for turfgrasses. Follow the recommendations given by the soil test report to determine lime, phosphorus, and potassium requirements. Apply nitrogen, using a quick release form, at a rate of 1/2 lb/1000

sq. ft. Fertilizer applications after a flooding event are important to increase turfgrass growth and recovery. Nitrogen and potassium stimulate recovery and improve stress tolerance. Phosphorus will help promote seedling growth.

Depending on the degree of damage that results from a flooding event, fields may have areas of varying size that need to be replanted to facilitate recovery.

Cool-season

Fields with little damage may only need to be spot seeded or lightly overseeded. Fields with moderate to extensive damage may require seedbed preparation and heavy overseeding. Surface cultivation should be used to prepare fields for overseeding. Choosing a turfgrass species for overseeding depends on when the field must be used. Desirable species for overseeding include:

- 100% Kentucky bluegrass if there is appropriate time for establishment. Seed can be applied at 2-3 lb/1000 sq. ft.
- Perennial ryegrass used in combination with Kentucky bluegrass if field needs to be used immediately. Perennial ryegrass can be ready for play within 4 weeks with aggressive management. Seed can be applied at 4-6 lb/1000 sq. ft.
- High quality turf-type tall fescue blends applied at 8 lb/1000 sq. ft.

Note: Seeding amounts are only suggestions. Depending on damage, affected areas may require increased amounts of seed/1000 sq. ft.

Warm-season

Warm-season fields may be planted with seeded bermudagrass cultivars; however, more often fields will require sprigging or sodding for re-establishment. Surface cultivation should be used to prepare fields for seeding or sprigging. Rates for seeding or vegetative propagation are: bermudagrass seed at 0.5-2 lb/1000 sq. ft. Depending on damage, affected areas may require increased amounts of seed/1000 sq. ft. Bermudagrass sprigs can be applied at 400-800 bushels/acre. Sprigging rates of 1000 – 1200 bushels/acre can provide full cover in 28 days.

Once seeding or sprigging has taken place, keep the area moist during the first month of germination and growth. It is important to remember that the area should remain moist and not wet for successful establishment. Soil that is too wet or too dry inhibits seedling germination and sprig establishment. Water should be available as installed or portable irrigation.

Areas with extensive flood damage may benefit from sod. Sod can allow for play within 3 months if it is properly maintained on cool-season turf fields. For bermudagrass a sodded field will likely be ready to play in 3-4 weeks at most, particularly if it is installed in the summer months. If flooding occurs during the season on a game field where resodding is the only option and

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budget allows, thick cut sod (1.25 in – 1.75 in) should be used. Thick cut sod allows for the field to be playable within hours instead of months. However, using thick cut sod may promote greater potential for layering between the sod's soil composition and the field's rootzone composition. Aeration may help alleviate layering, but may not be possible during the season due to weekly games or other events.

Pest, disease control

Weeds may pose a problem after flooding events due to floodwaters depositing weed seeds on fields. On fields with little damage, preemergence and/or postemergence herbicides can be used to control weeds. If the field suffered moderate to extensive damage and needs to be reestablished, weeds may compete with germinating turfgrasses. Fall seeding of cool-season grasses should not require herbicides. Seeding of cool and warm-season grasses during spring and early summer usually require some sort of weed control. Only a few herbicides are labeled for use at time of seeding, while several others can be applied after emergence of turfgrasses or after establishment (establishment defined as having two mowings). Always read product labels to ensure proper use, timing, and rates of herbicides being used.

Have a plan in place for field clean up and be prepared to communicate with your crew, supervisors, and users.

Depending on the time of year the flood occurs, weather conditions may contribute to disease development. Hot humid weather in conjunction with saturated soil can create a perfect environment for diseases to develop. Scouting for diseases during recovery or re-establishment can prevent further damage. Select proper fungicides after proper identification of the disease and follow label directions.

Sediment must be removed from baseball and softball skin in fields to restore proper drainage. Severity of the flood will determine the amount of contaminated in field soil that needs to be removed. Some in fields may require 2 inches to be removed while other in fields may require complete renovation. Thinner layers of sediment are easier to remove when allowed to dry and flaking occurs. Sediment can be removed using rakes, at bottom shovels, or a box blade on a tractor. Once sediment is completely removed, new in field material can be incorporated and graded to the correct slope. The pitching mound may also need to be reconstructed and restored to the correct slope. Base anchors,

foul poles, and the pitching rubber may need to be reset as a result of being washed away or offset by flood waters.

Synthetic turf

Synthetic turf fields are constructed of polyethylene fibers and various polymers that are not damaged when submerged under water for long periods of time. Major concerns for synthetic fields following a flood include insurance and warranty considerations, sediment and debris removal, carpet displacement, in fill displacement and/or loss, contamination, and/or complete replacement.

Damage to a synthetic turf surface is typically covered by insurance and secured with an insured warranty. Before conducting any remediation efforts, the insurance provider should be consulted to approve any effort and expenditure so the vendor warranty is not violated.

Large debris can be removed by hand while smaller debris can be removed using a sweeper. Determine the best way to remove sediment. Some sediment may be easier to remove when wet; some may be easier to remove when dry. Although slow and tedious, sediment removal should occur as soon as possible.

If sediment and small debris has infiltrated into the in fill, a deep cleaning can be completed using a motorized brush vacuum. Following debris and sediment removal, drainage analysis should be conducted to ensure the field is draining at an adequate rate.

During extreme flooding events, water can elevate the synthetic surface and result in wrinkles after the floodwaters recede. The fabric will need to be stretched and maneuvered back into position. Professionals can usually manipulate the surface back into place within a few hours.

Volume of water and speed of the current will determine the amount of in fill displaced from a synthetic turf system. High flow rates will result in greater loss of in fill material than stagnant water. Typically loss of in fill is minimal, however the depth should be checked to ensure it is in compliance with manufacturer recommendations. Once in fill has been restored to the proper depth, a Gmax analysis should be performed to evaluate surface hardness and ensure the field is safe for play.

Following a flood in fill material should be tested using a contamination analysis to confirm there are no harmful contaminants present. Topical sprays are available to sanitize the entire synthetic turf system including the in fill. In fill can also be removed, cleaned to remove contaminants, and placed back into the synthetic turf system.

Severe flooding events may require complete removal of the in fill material and re-infilling the synthetic turf system. In some cases, a complete synthetic field system replacement may be necessary due to extreme flooding events.

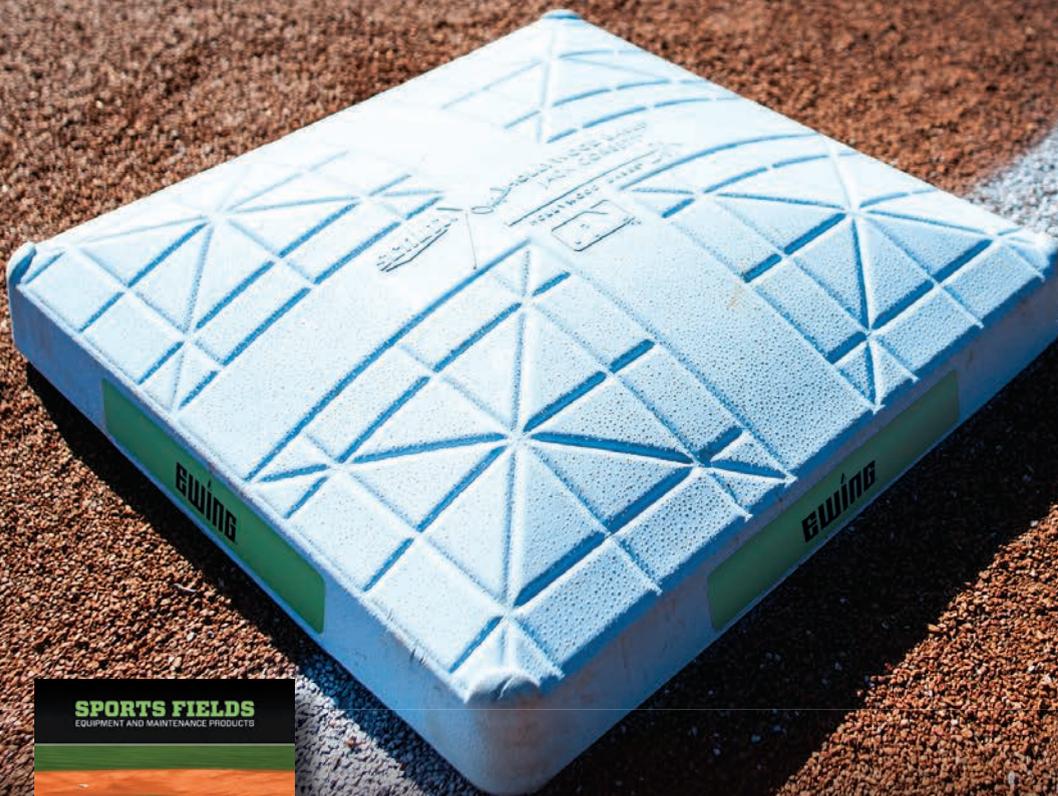
Flash floods

A flash flood is the rapid flooding of a low-lying area as a

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result of heavy rain, snowmelt, or collapse of a structure such as a dam. Flash floods are different from regular floods because they occur in less than 6 hours. Sports fields that may be prone to flash flooding should ensure storm drains and other drainage areas are accessible and not clogged.

When flash flooding occurs, efforts to push water toward drainage areas should be used. Keeping the water in motion keeps sediment and debris suspended and reduces the amount of sediment deposited on the field. Once the water is cleared, vacuums and sweepers can be used to remove small debris. A fine sediment layer may still present a problem. If the layer is too thin to be manually removed, soil cultivation and topdressing can be used to break up the sediment layer. Light films of sediment on leaf

Soil that is too wet or too dry inhibits seedling germination and sprig establishment.

blades can be removed with soft broom drags or light irrigation.

As with all weather events, it is important to be prepared. Before possible flooding events, ensure the field is prepared to handle large amounts of water. For example, make sure storm drains are clear to help expedite drainage of the field. Have a plan in place for field clean up and be prepared to communicate with your crew, supervisors, and users.

Preparing your field and facility for the worst can often reduce flood damage and cleanup efforts. **ST**

This information is from the Sports Turf Managers Association's online Knowledge Center; contributors included Steve Wightman, Tim VanLoo, CSFM, Joe Wagner, and Mark Nicholls.

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the area until you are making your last mesotrione application. In other words, it is better to wait and reseed with the second or third mesotrione application, then to seed when the first round of mesotrione is being applied.

Topramazone is a more recent introduction to the turfgrass market. It is similar to mesotrione in its weed control spectrum and its safety to seedling turfgrass. Make sure to follow the label recommendations carefully.

After the seed has germinated there is a period of time in which your options for weed control become limited. Most postemergence herbicides for broadleaf weed control have language on the label that states that following seeding, the turf needs to be sufficiently established so that it has been mowed three times before the product can be safely used.

All of the herbicides mentioned in this column are good products and can be quite effective. You can help to improve your chances of success by avoiding the 2-4 week period each year that is the peak of germination for the particular weed species that dominate your fields. For example, each of these products is quite effective at reducing weed establishment when seeding or over-seeding in July when weed competition begins to drop off. However, each of these products can produce less than complete weed control if used in mid to late May. This is more likely to be a



problem if the May timing is in conjunction with seeding a slower to germinate species such as Kentucky bluegrass. By simply waiting a couple of weeks (or seeding a couple of weeks earlier), weed seed competition may be greatly reduced, which further increases your chances of success when seeding or overseeding. **ST**

**Mention of a specific product does not constitute an endorsement over other products that may be similar*

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GRATITUDE IS A VERB AT HOME AND WORK

“Gratitude unlocks the fullness of life. It turns what we have into enough, and more. It turns denial into acceptance, chaos to order, and confusion to clarity. It can turn a meal into a feast, a house into a home, a stranger into a friend. Gratitude makes sense of our past, brings peace for today and creates a vision for tomorrow”

— MELODY BEATTIE

BY BARBARA CHURCHILL



Barbara Churchill

We’ve all heard the expression “attitude of gratitude” but other than holiday season when do you turn your attention to the things for which you are grateful?

That sounds like a good thing to do. After all, grateful people share the following characteristics:

- Grateful people are more optimistic, energetic, enthusiastic, determined, interested, joyful
- They feel stronger when faced with a challenge, get more sleep, exercise more, get sick less

■ Grateful people are more likely to help others, have less clutter in their surroundings, have clear thinking, are less envious, experience less stress, are more organized, make more progress towards goals, live longer

All good stuff, right?

Well, I’d like to take it a little deeper.

Suppose you looked at the word gratitude as a verb—an action word?

What if in addition to thinking grateful thoughts you started behaving in a grateful way?

What does that look like?

Here are 10 ways to express your gratitude with actions at home and at work:

Gratitude journal. Record what you’re thankful for before bed, in the morning, or keep a small notebook with you during the day. I write in my gratitude journal before I go to sleep. It’s a beautiful way to drift off, plus studies have shown that what you focus on at bedtime is what you’ll wake up to in the morning. Why not give yourself a head start!

Gratitude box. It could be like a recipe card box with 4×6 cards and dividers with the months of the year written on them. Date the 4×6 cards, 1-31 for each month. Then write down one thing daily and put the year after what you wrote. You can reuse these cards year after year and will have a keepsake of all you’ve been grateful for over the years in one spot.

List of 100 things. Make a list of things/people that you’re grateful for and use my journal pages (see barbarachurchill.com) to help get you started. Write this out by hand; studies have shown it’s the most powerful way to create energy and manifestations, rather than typing. Work application: Do this for the position you currently hold. Make it a game to see how quickly you can reach 100. Don’t like your job? Dig deeper. There is always something to be grateful for in practically every situation.

Express gratitude at the dinner table. My family has been doing this for years. We initially started because the grace we said was becoming rote and our kids weren’t invested in it. Expressing gratitude for things that happened that day keeps us all in the moment and present with the gifts that come our way, however small. (We’ve done this for so long, that our kids’ friends are participating, too!) Work application: Do you tell your team or colleagues that you are grateful for them regularly? We are all so busy doing our jobs we might forget to tell those around us, especially those that support us, how thankful we are that they are there. Put a smile on someone’s face today by letting him or her know.

Thank the people behind the service. Do you get coffee daily? Drop off dry cleaning? Have your car washed, house cleaned, shop at a store where a cashier checks you out, eat in a restaurant? When is the last time you actually thanked them for the ease they bring into your life? Use their name, make eye

contact and really thank them. People just want to be noticed.

Give thanks for the hard stuff. Instead of regretting your mistakes or being caught up in how you were wronged and the drama that goes along with that, look at the challenges you've faced and be grateful for what you've learned. There's always a lesson in everything. Work application: When the goal isn't met or the effort falls short, how do you as a leader handle that? If you aren't pointing out the little successes, you're missing a great opportunity to let your team know they are doing a good job despite this setback. Hold a meeting to review what worked well and open the conversation to the lessons they learned. Within this wisdom are many gold nuggets you can use in the future.

Handwritten notes. No typing or emailing here! Write a note of thanks to a mentor, coach, teacher, friend—someone who has influenced your life in a positive way. Work application: When is the last time you received a thank you note from your boss or you gave one to a team member? In this get-it-done-yesterday environment, taking 3-5 minutes to write a sincere and specific note goes a long way toward maintaining trust and loyalty within your team.

Be the example. When gathering with friends, avoid turning it into a complaint session. Start with some gratitude for what's happening (or not happening, like illness, job loss, etc.) in your life. Notice how that affects the tone of the gathering. Work application: It is all too easy to join in on gossip on a Monday morning, so be proactive and start the conversation on a positive note. Show up as the leader you are, even at the "water cooler."

Give thanks for the mundane. We all get caught taking our spouse or partner or people in general for granted for things they do all the time; making dinner, cleaning the bathrooms, grocery shopping, fixing stuff around the house, so take time to acknowledge the small stuff, too. The people in your life will appreciate it immensely. Work application: Is there always a fresh pot of coffee ready in the break room, for example? Such things don't just happen magically. Someone is making sure it all gets done every day. Take the time to find out whose job it is to handle the day-to-day small tasks at your facility and be grateful they are there to do so. You may want to write them a note of thanks (see #7).

Pause. The next time you're outside, pause and look up. Give thanks to The Universe that created the beautiful lakes right in our backyard, colorful leaves, snowflakes and breezes that cool. Nature can be taken for granted so easily in our busy lives. Pause and notice. We truly live in an amazing world!

Put these actions into practice—choose at least one. Just make sure you commit to taking action and being in gratitude each and every day, at home and at work! **ST**

Barbara Churchill is a Leadership & Life Coach and Speaker. She can be reached at Barbara@barbarachurchill.com or see www.barbarachurchill.com.

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TIPS ON TARP

Editor's note: *This article first appeared in our March 2013 issue; due to last-minute issues in the production process, we chose to re-run it because it's still relevant. Some of the contributors may now be in other jobs.*

Corey Russell, Myrtle Beach Pelicans

Last year in Myrtle Beach we had a total of 55 tarp pulls. These were either overnight, in game, during the day, etc. We only had to pull twice in-game for a short delay. For those in-game pulls we try to aim for 60-90 seconds to get the field covered and then worry about getting it bagged down.

Here at the beach with the coastal weather, we see a lot of our wet conditions as pop up thunderstorms off the water between 2 pm and 6 pm. So a lot of our concerns are whether or not to cancel batting practice and trying to get as much of our pre-game routine done before the tarp goes on if it looks like it we won't be able to get it off until closer to game time. We've put it out with 6 people and that is the BARE minimum. About 10 is what we shoot for. We actually had some bad rips in our tarp, some that got to be more than 100 feet long by the end of the season. This led to us going and retrieving the local high school's tarp for the last two home stands of the year.

I think the best way to handle your tarp is to just try and convey what you're trying to do to everyone as loudly and early as possible. The fewer people trying to lead the better. Usually my assistant and I are on each end of the tarp and we're the only ones giving out directions. No matter how many times you do it however, someone always forgets what the routine is, which is the downfall of not having an actual "tarp crew." It's everyone on deck here from the GM to the front office interns.

Opie Cheek, Clearwater Threshers

With our office staff and crew we have 12 people who can help with our tarp and we can get it on the field in 2 minutes. If there is water on the tarp, we just get a running start on pulling off the tarp, which gets the water moving and we dump it in the outfield. Then we put it back on the infield before folding it up.

Brock Phipps, Springfield Cardinals

I'm sure with a lot of minor league teams when it comes to dealing with the tarp; safety has to be the biggest priority. I always try to stress to our new employees how to handle the tarp with care yet respect what can happen in severe weather conditions. We have all been in that situation when the wind takes control and it's either protecting the field or protecting someone from getting hurt. I let my staff know that if you don't feel in control and your feet is coming off the ground it's probably time to let go.

At Hammons Field we have both the Missouri State Bears and the Springfield Cardinals using the facility. When the Bears are playing I use their players to cover the field with the tarp. On game day it's my staff, which consists of 6-7 members, along with the players and coaching staff. To pull the tarp during the Cardinals season, I use my staff along with the office staff. Communication is the key when dealing with both teams. When rain is approaching I will send out a text message or email just to let them know they will be needed. I have found that it's helpful to send out a notice before the season to all staff to have extra clothes on hand. There is nothing like working in the office with soggy clothes all day. Another key is to have the office staff stagger their lunch schedule; it's not a good feeling when bodies are needed and no one is around.

With minimal staff in the minor leagues one of the first things I ever did was to roll a rope into the tarp. Talk about saving time and some energy—when it's crunch time to place the tarp on the field during the game. To roll the tarp out we simply hook on with our utility vehicle and proceed to roll the tarp out. The tarp is positioned on the right field warning track. I like to have the tube positioned on the wall that when the tarp is rolled out it's one fold and go. This also enables half of the skin to be covered from the first fold. It's very important to pull the tarp with the seams.

Here at Hammons Field we have four tarp drains in shallow right field. This enables us to remove a lot of water in a short amount of time. It's always nice to have a little breeze in the right direction when it's time to remove the water. The air movement under the tarp makes it like adding 10 staff members to the tarp crew. After dumping the tarp in right field we then pull back across the infield and begin the folding process. We fold the tarp twice and then roll it up. It's very important to keep all the seams and edges straight to enable the next pull to go smoothly.

If we expect high wind I make sure the tarp is pulled tight in every direction. We surround the tarp and pull in every direction to accomplish this. Metal stakes anchor the tarp down and then equipment is placed on the four corners. I found that using stakes is the best and easiest way to anchor the tarp. Sand bags seem to drag along on the top of the tarp when wind begins to pick up and they are time consuming to put in place. If no wind is expected we then place two carpet-drying fans on the first and third base side of the tarp and inflate the bottom side to the tarp. This has really helped with two problems: the first is this allows air movement and cuts down on disease; the other is it will help to shed some water off of the tarp. It's amazing what these can do with the short amount of time it takes to set them in place. Take care of your tarp and it will definitely save you time and labor when used correctly.

Joey Stevenson, Indianapolis Indians

To get it on in a timely manner, at the least we need 8-10 people, but when all front office interns are able to make it down we have approximately 17-20. At full-tilt, I believe one of our best tarp times was 1 minute, 7 seconds. On average we are probably right around 90 seconds. We use 140-foot straps rolled up in the tarp,

pulled by two people, with the remaining people pushing tarp. It really helps get the tarp off the wall and you don't have to "flip" the end of the tarp over the tube on the rollout. The BEST way to get the tarp out we found, is to tell the crew work hard for 90 seconds and then the pain is over! During non-game tarp pulls, we use a Gator to pull the tarp, which helps keep the crew fresh.

Keith Winter, Fort Wayne Tincaps

Game day management—When in doubt, pull it! Compile the best and most trusted weather information you have at your disposal, then trust your instincts. The longer you are in this business, the more you learn that your instincts are one of your greatest assets. On game days, when hundreds of thousands of dollars may be at stake, it is always better to be safe than sorry. The worst thing that can happen is you take a dry tarp off a field if it doesn't rain. Also, as you get closer to game time, be prepared! If BP is going on, talk to both teams about your tarp pull contingency plan so the field can be cleared as quickly as possible. Minutes equal dollars when it comes to protecting a game-day field.

We wrap a rope in our tarp and pull out the roll with a utility vehicle. This is faster than pushing the roll out by hand and doesn't necessitate having to get people in place to push. Once the tarp is rolled out, we can get it in position with 6-8 strong-armed bodies, but I prefer 12-15 so that placement is perfect and time is saved. Our record from pull out to placement is about 90 seconds for an in-game pull.

Other tarp management ideas from Keith Winter

We inflate our tarp EVERYTIME with two large fans to keep air circulating under the tarp. Not only is this a turf disease prevention step, but the water also runs off the inflated tarp to the edges, making it quicker and easier to get the tarp back off the field. When the rain stops, we move excess water off with roller squeegees, and in most cases, don't have to take the time and drag all that infield conditioner around by draining the tarp in another direction.

When we take the tarp off the field, I try to have enough front office personnel on hand to "hold up" the opposite side to keep from dragging so much conditioner off the baselines and skin. There will always be some piles after the fold, but lifting the folded edge helps. When rolling the tarp back on the roll, we have a narrow window in the visitor's bullpen



Corey Russell leads his crew in repairing a torn tarp last summer in Myrtle Beach.

to place the tarp, so I make sure myself or one of my grounds crew is "aligning" the roll. A "bad roll" isn't worth hurrying, because you know it always has to come back out again.

Finally, if you are inflating the tarp and the weather is threatening, make sure it is ultra-secure. We have foot-long tarp stakes at every grommet and put a piece of equipment on three corners. In the center field corner, we roll the tarp up in the roll almost to the edge of the skin, because I like Mother Nature to water as much grass as possible. **ST**

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Bryan G. Hopkins, PhD, and student Beth B. Peacock evaluating root depth as a function of nitrogen.

WATER-WISE TURF GOOD EVEN WHEN WITHOUT DROUGHT

■ BY BRYAN G. HOPKINS, PHD, AUSTIN P. HOPKINS & NEIL C. HANSEN, PHD

As populations grow and the climate warms, the demand for water increases. Recent droughts have impacted nearly every region, including those traditionally having high precipitation. These left many turfgrass managers scrambling for solutions to grow grass with less water. The time to fine tune water conservation techniques and to train turfgrass to be drought resistant comes before the drought arrives. We recommend the following Best Management Practices (BMPs) to conserve water. The other good news is that these practices are good for growing grass even when there is ample water.

BMPs for conserving irrigation water

Mowing height. The disadvantages of short mowing are increased weed/disease pressure and shallow rooting (and resultant reduction in plant available water storage)—reducing the lifespan of a field. The main advantage for short mowing is that it can result in increased shoot density and a more tightly

knit together playing surface—providing that other factors are optimal. From a sport perspective, the advantage of shortly mowed grass is increased ball roll speed and reliability in trajectory. Despite popular opinion, mowing height does not impact athlete speed, although tall grass can retain more water and result in slippage. Raise mowing height as close to ideal as possible. This height is dependent upon sport and grass species. Generally, heights below 1.25 inch are not advisable for long-term health of upright species (such as Kentucky bluegrass). Prostrate species (such as bentgrass and bermudagrass) can tolerate much lower mowing, but even these will have more problems and reduced lifespan as mowing height decreases.

Mowing frequency. Do not “scalp” the grass by removing more than 40% of shoot height when mowing. Scalped plants have a 10-14 day period of root growth inhibition, which results in shallower and less efficient roots and poor water use efficiency.

Nitrogen fertilization. Nitrogen is the most important nutrient for plant health and water conservation. Excess nitrogen

stimulates shoot growth at the expense of roots, leading to higher water demand with less access to water stored deeper in the soil. Nitrogen fertilizer management can be accomplished by: 1) frequent (every 2-4 weeks), low dose foliar applications of traditional, “quick-release” nitrogen fertilizer through the growing season, 2) fertigation through injection of low levels of nitrogen fertilizer into the water each irrigation event, or 3) application of a blend of “quick-release” and

“controlled-release” fertilizers twice per year. For example, we have used an application of 1-2 lb N/1000 ft² of a proven polymer coated urea (PCU) and 0.5-1 lb N/1000 ft² of ammonium sulfate (if sulfur is also needed) or urea (if sulfur is not needed due to high soil organic matter or high amounts in the irrigation water)].

As a general rule, the total amount of nitrogen needed annually is 0.5 to 1.0 lb N/1000 ft² for each month of active growth. The high end of the range is needed for: 1) soils that leach readily, 2) soils with moderate to low organic matter content (<3%), and 3) venues where clippings and, thus, nutrients, are removed with each mowing. Tissue analysis can be used to determine if the fertilization scheme is working properly (ideally, the turfgrass shoots have about 2.8-4.1% nitrogen concentration). It is important to avoid spikes in nitrogen availability to plants. In terms of growing healthy deep roots, and thus water conservation impacts, it is essential to have adequate nitrogen in the fall months for the northern hemisphere (spring for southern hemisphere) when plants are hormonally recognizing that it is time to prepare for winter. Also, moderate nitrogen is even needed when plants are suffering from drought stress.

Phosphorus, potassium, and secondary and micronutrient fertilization. These other nutrients are equally important, but they are easier to manage than nitrogen because their soil supply is more buffered and stable in most soil (not true in predominately sand soil). It is essential to base the fertilization of these nutrients on soil testing to the depth of root growth, using good sampling techniques (<http://eal.byu.edu/SampleSubmission>) and a high quality laboratory with research-based recommendations. Avoid toxicities and nutrient imbalances caused by over-fertilization. Adequate potassium is particularly important for proper water relations, as this nutrient is important to maintain proper cellular turgor. As with nitrogen, plant tissue analysis can be an effective tool to monitor the effectiveness of the fertilization program.

Irrigation system design and installation. An irrigation professional should design the system and the installation should follow the design precisely, with appropriate water pressure at each nozzle, high quality irrigation parts, and appropriately sized piping, heads, regulators, and nozzles.

Achieve great than 75% irrigation uniformity (DU). Conduct regular irrigation uniformity water audits. If uniformity is not within a reasonable limit, correct problems with heads, nozzles, etc. Periodically check each irrigation head for proper upright

orientation, water pressure, throw distance, and coverage pattern. Use aerial imagery (drone, etc.) to evaluate plant health uniformity during times of intentional dry down of the landscape. For large operations, a

dedicated crew of irrigation uniformity specialists often can cover their wages with savings in water, fertilizer, pesticide, and plant replacements.

Irrigation rate and frequency. The average turfgrass manager is applying 2-4 times more irrigation water than is needed. Watering daily is rarely needed if most or all of the BMPs discussed herein are followed. Times between irrigations may be every 10-14 days in spring and fall and every 2-5 days in summer. Sandy, low organic matter soils with low water holding capacity will need to be watered relatively frequently compared to loam soils. The rule of irrigating “deeply and infrequently” is best for plant health and for water conservation. Plant roots need oxygen. Watering too frequently can contribute to oxygen depletion. This problem occurs far more often than the average turf manager realizes. Apply enough irrigation water to wet soil to the depth of the roots, but avoiding leaching below the rootzone (water slightly below the roots will wick upwards). Frequently assess the depth of roots because it changes through the year as a function of temperature stresses.

After irrigating, allow the soil to dry down somewhat in order to maintain appropriate oxygen levels. The time between irrigation can be determined through calculation of water holding capacity and measurement of evapotranspiration (ET) rates. Alternatively, this can be determined through the use of soil moisture sensors—calibrating through visual assessments to establish a correlation with sensor values with the limit of dryness a specific grass can tolerate without negative effects. Also, irrigation rate needs to be evaluated against the water infiltration rate of the soil. It is possible, especially on sloped surfaces, that the irrigation system applies water at a rate that exceeds the infiltration rate, resulting in wasted water runoff and development of dry spots. In these cases, the heads can be changed out for low-flow models. Alternatively, the system can be cycled by applying lesser amounts of water, stopping it to allow for some drainage, restarting it a short time later, and repeating until the water has reached the desired depth in the soil.

Aeration. Proper aeration results in roots having adequate oxygen and healthier plants with deep roots. Monitor compaction

The time to fine tune water conservation techniques and to train turfgrass to be drought resistant comes before the drought arrives.

by measuring soil hardness/density and aerate the soil as often as is needed. Some soils need to be aerated as often as every other week during the playing season.

Syringing. Heat stress can cause cool season turfgrasses to go dormant. This is often mistaken for water stress. In cases of extreme heat it may be helpful to apply a very light rate of irrigation to cool the canopy during the heat of the day when temperatures are greater than 80F.

Intentionally water stress the grass in the spring during times of minimal or non-use. We have found it effective to do this twice annually, taking the grass to the point of visible water stress (note: this also helps calibrate soil moisture sensors). There is often spatial variability that causes problems with managing this practice, with part(s) of the field showing water stress and other sections not. Often, this requires hand watering the areas that dry out first so as to allow the other areas enough time to develop stress before the entire field is irrigated.

Fix dry spots. The typical knee jerk reaction for a single dry spot is to up the rate of irrigation over the whole field. Doing so results in the over irrigation

of the rest of the field which results in wasted water, leaching/runoff of fertilizer and pesticides, and possible plant health problems. These dry spots are indicative of localized problems that need attention, such as differences in drainage rates, soil hydrophobicity, irrigation system pattern problems, presence of water guzzling tree roots, differences in species (especially when shallow rooted annual bluegrass is dominant), and disease, insect, or nematode damage to the roots/crowns. Correctly diagnosing and addressing problem areas is better than compensating with more irrigation.

Other BMPs

■ **Brown = Dry?** Most people see brown spots and assume these areas are dry. However, a probe of the soil often shows ample moisture—suggesting that the problem is related to insect, disease, heat, etc., damage. Buy a shovel or a soil probe and use it to look at soil and roots.

■ **Surfactant.** Application of a high quality, research proven surfactant/wetting agent is often necessary on soils with a tendency to become hydrophobic or those that form crusts.

■ **Manage tree roots.** Tree roots can drain soil moisture, resulting in dry spots and poor uniformity. Periodically trench deeply enough to prune tree roots along the edges of sports field so as to prevent them from negatively impacting the turf. However, it is important to consider that these trees may be desirable for the overall landscape and the root pruning may negatively impact them. Consult a professional arborist to avoid damaging the trees.

■ **Manage weeds.** Excellent weed control is essential for healthy sports turfgrass. This is especially an important issue when fields are infected with non-desirable grass weeds, such as annual

bluegrass. Annual bluegrass, in particular, is known to have shallow roots and large patches of this can become dormant when irrigation is managed carefully. These weeds need to be controlled through following Best Management Practices, herbicide use, and, if necessary, renovation of all or part of severely infested fields.



Visual response of the interaction of nitrogen during drought, showing the importance of continued nitrogen fertilization even when water restrictions are in place.

These BMPs help foster healthy

plants with deep roots that are “water tough” by being able to thrive with modest levels of irrigation. Many of these BMPs interact with one another. For example, over-irrigating results in the leaching of some nutrients and pesticides, resulting in poor growing conditions and negative environmental impacts. Another example is over-irrigating resulting in problems with disease. The disease can result in unhealthy roots, which then are more prone desiccation. Thus, it is essential to manage all aspects of the turfgrass with scientifically proven practices with measurable results in order to be both a good steward of water and other natural resources, as well as having aesthetically pleasing and functional sports fields. **ST**

Bryan G. Hopkins, PhD, is a professor in the Plant & Wildlife Sciences Department at Brigham Young University, Provo, UT. Neil C. Hansen, PhD, is an associate professor in the department. Austin P. Hopkins is a student at BYU.

John Mascaro's Photo Quiz

Answers from page 17

John Mascaro is President of Turf-Tec International

This roped off area is actually a solution to a problem and not an actual problem. The New England Patriots training facility is located on the grounds of Gillette Stadium and equipment traffic has always been an issue as this is also the main equipment path to maintain the training fields, as well as taking turf equipment in and out of the main stadium. The Head Groundskeeper had a brilliant idea to install artificial turf on the maintenance path and rope it off, making sure that the equipment operators stay on the artificial turf and protecting the bluegrass practice fields. As you can tell from the photos, this idea is an awesome success and the area now has green turf all year long, no matter how much traffic is put on the path.

Thanks to Jon Bengtson, Head Groundskeeper at Gillette Stadium in Foxborough, MA for allowing me to take these photos.

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



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THE *SPORTSTURF* INTERVIEW: DANNY LOSITO

This month in “The SportsTurf Interview,” we visit Minor League Baseball and meet Danny Losito, the head groundskeeper for the Columbia (SC) Fireflies, Single A affiliate for the New York Mets. This is his first year with the club. Danny was formerly the assistant head groundskeeper for the Triple A Reno Aces, worked seasonally for the San Diego Padres, and interned for the Washington Nationals, so he’s building up the frequent flier miles, or perhaps putting a ton of miles on his truck!

Danny has a Bachelor of Science degree in turfgrass science from North Carolina State.

SportsTurf: In your new job, what have been your priorities so far?

Losito: My focus early in the year was to continue the recovery process from a few fall events and football games as well as continuing to grow in and maintain the overseeded

ryegrass. A lot of time went into some little renovations on the field such as redefining the edges and dimensions of the field, building the pitcher’s mound, reshaping the bullpens and creating cutouts around them to be used as cart paths. One of my biggest priorities so far has been to work with my assistant and intern to develop my system here and really start to plan for this year and the future.

SportsTurf: What has been the biggest challenge so far with your new job?

Losito: The biggest challenge has been learning to manage my time and utilize the staff to the best of our ability. It can be a challenge at times because it is easy to get carried away and want to do everything yourself or the way you know how. Learning to trust, empower and rely on other people to help you get the job done is something that is new for me coming from a position where I was that person being relied

on. Luckily, I am fortunate to have an assistant who opened the ballpark here in Columbia and has done a great job buying into my style of work.

SportsTurf: How is planning to host the Sally League All-Star game affecting your plan for this summer, if at all?

Losito: The timing of the All-Star game works well with our schedule because the team is out of town for 6 days before the first All-Star event. This will allow us time to prepare the field and let it recover and manage as needed before the big week. I am trying not to let the All-Star game affect how I plan to manage the field this summer. Easier said than done though. I obviously want the field to play and look its best for that week, but I have high expectations for the quality of our surface and plan to begin and end the season in "All-Star" shape.

The biggest change in our plan for this summer has been from our front office limiting the amount of major on-field events leading up to All-Star week.

SportsTurf: Have you ever worked warm-season before?

Losito: I have worked with overseeded bermudagrass with the San Diego Padres, and non-overseeded bermudagrass with the Town of Cary (NC) at the USA Baseball National Training Facility.

The biggest challenge has been learning to manage my time and utilize the staff to the best of our ability.

SportsTurf: How has social media impacted your work?

Losito: Social media has made its biggest impact in my work by providing me with an avenue to connect with other people and groundskeepers in the industry. It can open the

door for communication between people you might not already know and it allows people to share and borrow ideas.

SportsTurf: What is the best advice you've ever received about doing your job?

Losito: The best advice that I have ever received has been to not chase the dollar when trying to advance in this industry, but to chase the opportunity that is going to make you a better groundskeeper and a better person. Work harder than everyone else around you and eventually somebody will notice.

SportsTurf: What are the most important issues facing the sports turf management industry?

Losito: The hot topics seem to be employee retention, salary improvements, and attracting new staff members. I believe those are all important, but equally as important as maintaining our professionalism and work ethic. Making sure we are holding each other accountable for trying harder every day to be better at our jobs and remain an asset to our individual organizations. Push yourself to go outside of your comfort zone every now and then and use the resources available to you to try new things, experiment, and innovate. It is our job to keep up with the times and do whatever is necessary to keep producing the highest quality playing surfaces every single day. Do what you have always done, and you'll get what you have always gotten.

SportsTurf: What are your passions and interests outside of work?

Losito: Outside of work, I enjoy playing hockey as much as I can. It is a great outlet for me to forget about life for an hour and a half and just have fun. I like being outdoors and staying active, playing music, sightseeing, and finding good coffee shops. **ST**



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MORE THAN A GAME™ BUILDS KIDS' BASEBALL DREAMS

Editor's note: *This article was supplied by Turface Athletics.*

Dreams require only imagination. But for dreams to become reality, it takes initiative, dedication, and tangible resources—things that, unfortunately, are in short supply in many communities.

More Than A Game is a charity founded to solve these problems. Since 2012, More Than A Game has been bringing the joys of sports to underserved places both inside and outside the US through instruction, equipment donations and, most noticeably, field construction.

"The idea for More Than A Game came out of the baseball program at our alma mater, Marshall University," says Tim Fanning, President. "Our founder, Marshall Murray, and I were introduced by one of my former players, Josh McConnell, while they were playing baseball at Marshall. At the time I was coaching high school baseball at Glenwood HS in Phenix City, AL. Community service was always a big part of my philosophy as a coach so I was extremely interested in his ideas for giving back."

After graduation, Murray headed back to his home state of California and MTAG was born by starting the Walnut Creek Crawdads summer collegiate team. They performed schoolyard clean-ups, equipment drives and local service projects. In the summer of 2012, Fanning reached out to Murray and expressed interest in combining their efforts to serve underprivileged kids on an international level. Their first trip, to Panama, underscored the need for quality playing fields where kids could learn and enjoy the sport of baseball.

"It was in January, 2013, at the American Baseball Coaches Association coaching conference, that we met Jeff Langner of Turface Athletics. We told him about our experiences in Panama and our long-term visions for the organization, and he immediately expressed an interest in helping us."

That same year, More Than A Game returned to the jungles of Panama, this time with ten



tons of Turface MVP, an infield conditioner manufactured by Profile Products, the parent company of Turface Athletics. The company also donated the funds necessary to transport the conditioner to the site in the country's remote Northern Province.

"That's when we began to take off as an organization," Fanning says. "Since that time we've either built or renovated baseball diamonds every year. We've done projects in Colombia, the Dominican Republic, as well as several in communities across the US. Turface Athletics has been a partner in every one."

For 2017, More Than A Game plans to do one international field project and several more within the United States. According to Langner, business manager for Turface Athletics, the company's involvement is an ideal way to extend the sport

of baseball to groups of kids, boys and girls alike, who would otherwise be playing in the streets, if at all.

"Turface products are used in the majority of professional ballparks in the United States," he says. "Putting our packing clays and infield conditioners on community fields does more than provide a safe playing surface. It also lets kids dream about playing the game at a higher level, on the same kind of field as professional athletes."

"Turface Athletics was the first major company to step up as a partner," says Fanning. "We've gained many other corporate sponsors since the beginning, but the Turface Athletics name gave us credibility. When you're attached to a brand like that, it opens people's eyes and opens doors for us."

NEW PRODUCTS

MINI TURFROLLER

g2 turf tools, inc. has debuted their newest piece of equipment, the *mini turf roller*, a 3-point hitch version of g2's turfroller with rounded edges that also incorporates their patented *turfslicer*. With this attachment, the *mini turfroller* makes planting sprigs, setting seed, and topdressing more



efficient. The blades also penetrate the thatch area to provide much needed air space while replanting existing stolons to promote a healthier, thicker turf. The slicer is fully adjustable to a depth of 1.5" for maximum slicing of turf, sprigs, or seed. The roller can be used to smooth existing turf surfaces with the maneuverability of a 3-point hitch attachment. You can now easily improve rolling production

without the compaction problems most heavy asphalt rollers cause to the underlying soil. Rolling has become a basic turf management practice to smooth the surface and place disturbed turf back in contact with the soil.

g2 turf tools, inc.

SWEEP-RITE TOW-BEHIND SWEEPER

Turf Pride LLC has begun production of commercial Lawn Sweepers. Sweep-Rite is a tow behind sweeper available as a single unit or in gangs of three. Durable and robust, the Sweep-Rite can handle clean up of leaves, debris, grass clippings. Sweep Rite is the preferred sweeper in artificial turf maintenance.



"Along with the proven performance, durability and a great history, we are in a position to provide service parts for the now discontinued *Parker Sweeper," said Don Cotton, president of Turf Pride. Replacement parts

are now available for the previous models of the *Suburbanite and *Estate Master, that were manufactured by *Parker and *Gravely. *OEM names and models are used for descriptive purposes only, Turf Pride claims no association with them.

Turf Pride

Uptown Outfield

STMA 2014 Field of the Year
Russ Chandler Stadium
Georgia Tech - Atlanta GA



Georgia Tech's field staff is headed by seven year veteran Sports Turf Manager Jon DeWitt while Chris Mays handles the day to day management of Russ Chandler Stadium and is assisted by Brandon Thrower. If you're looking for a winning sports turf that can handle non-stop action, a transition zone climate and heavy overseeding, TifSport's your answer. It's ideal for intramural fields, practice fields and game-day venues, where everything has to be perfect. Coaches and players love the way it looks and plays and you and your crew will appreciate how easy it is to manage. TifSport can only be sold as certified sod or sprigs and only by licensed members of the TifSport Growers Assoc. For more information call 706 552-4525 or visit us on the web at www.tifsport.com. Go Ramblin Wreck!

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NEW PRODUCTS

GREENPLAY CORK INFILL

Get the look, feel and performance of natural grass with organic Greenplay Performance cork infill. This unique, stand-alone cork, available exclusively through TTII or Greenplay, is a high-durability, high-performance cork that has been successfully used in hot, cold and wet climates across Europe and North America. Cork does not absorb water so dries very quickly after heavy rains. When specified our proprietary PFC Cork is available to all bidders. Additional product attributes include: 100% organic; odor free; non-toxic; enhanced Gmax for safety reduced turf temperatures; low abrasiveness; resistant to compaction; highly permeable; 100% recyclable into nature; no disposal costs; will not harbor bacteria; minimal water requirements; and 10-year manufacturer's warranty. Material is packaged in 660-pound bags on pallets.

Target Technologies International

NEW GRACO ELECTRIC AIRLESS STRIPER

Graco Inc. has introduced the LineLazer ES 1000, the first professional battery-powered airless line striper in the US that delivers power and performance without engine exhaust or noise. The LineLazer ES 1000 is a



true technology breakthrough for striping contractors who want to expand their business to indoor, limited noise or populated-area applications with a quiet, clean alternative power source without sacrificing performance. The

LineLazer ES 1000 features high-output electric battery power that eliminates gas costs, exhaust, noise and vibration while delivering crisp lines. The ES 1000 can deliver up to 60 gallons of material on a single charge with two batteries. The on-board charger maximizes performance and enables plug-in charging without battery removal.

The LineLazer ES 1000 also features a new innovative spray gun adjustment design with "G" Clamp holder system. **Graco Inc.**

NEW HIGH-PRESSURE PLUNGER PUMP

Valley industries is pleased to introduce its new Everflo 12-volt high-pressure plunger pump, the EFHP2000. Developed with high performance in mind, the EFHP 2000 plunger pump features multiple Quick-Connect



ports that provides the necessary flow for a spray gun, boom and other sprayer accessories.

Reaching up to 2gpm and 200 PSI, the Everflo EFHP2000 provides high-performance to spray longer distances or atomized droplets for misting applications. The EFHP2000 high-pressure plunger pump features Viton valves and Santoprene diaphragm for increased durability and efficiency. Automatic shut off when no flow is required, conserving battery life. Extremely smooth ceramic coating for increased seal life longevity. Finally, Round-Up ready and packaged with a handful of fittings to fit desired needs.

Everflo, Valley Industries

MULTI-USE PTO-POWERED RENOVATOR

The 60-inch Sports Turf Renovator STR6000XP is a tractor PTO-powered turf renovation machine that has many uses. In just one pass it will



remove the problematic infield lip on a baseball diamond, de-thatch, aerate, verticut and level turf. Using this machine will significantly reduce irrigation costs while promoting healthy turf. This machine has been widely

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NEW PRODUCTS

used by governmental agencies, cities, school districts, colleges and golf courses. The depth of the cut is infinitely adjustable with the use of a ratchet jack from 0-2 inches. The lips on an entire baseball field can be removed easily without removing the existing turf. This machine will turn rock hard infield red dirt into soft usable media without disrupting the base.

Power Turf Renovation

TRIMAX SNAKE

Trimax Mowing Systems are proud to announce the US release of their new turf mower, Snake, which was designed from the ground up using 30 years of innovation, refined engineering practice and customer insight combined. The 3.2m wide trailed rotary mower has been



specifically designed for sports turf applications where groundsmen are looking for a high standard of presentation with the need for safety, durability and low downtime. Its surprisingly quiet operation allows mowing in and around sensitive areas and

won't cause disturbance. Trimax has awarded Snake with their market leading 3-year warranty. A clever 'curb jump' feature allows the decks to be lifted with the blades still engaged to go over curbs, paths or other obstacles without stopping the PTO. This saves wear on the tractor and gearboxes and ensures smoother operation whilst mowing. Snake's sealed spindles mean there are fewer points to grease.

Trimax Mowing Systems

CUB CADET NOW MARKETING INFINICUT

Cub Cadet has acquired Advanced Turf Technology, a UK-based company that produces cutting reel mowers and cassettes specially designed for the sports field maintenance market. The INFiNiCut combines a lithium power source with user programmable frequency of clip rate and a dynamic return floating head, allowing the groundsman to optimize machine configuration to turf conditions present on any given day. As the only all-electric sports field mower in the world, in battery mode, it is so cost effective that it can largely pay for itself through annual fuel savings alone. It can also easily convert to gas power if preferred.



Cub Cadet

HARPER TURF VACUUM TV35

Harper Turf Equipment has introduced the next generation of self-propelled turf vacuums, the TV35, which features a new cooling system, ergonomic operator station and smooth foot-pedal operation. The most noticeable change is the remote mounted radiator and oil cooler for improved temperature control. The hydraulic powered cooling fan can be reversed to blow debris off the screen. When it's time to service



the machine, the screen easily removes for deep cleaning. The new, fully adjustable suspension seat reduces driver discomfort and improves posture. Brake release tools and cylinder stops can be conveniently stored in the operator station's toolbox. A

manually controlled hydrostatic foot pedal allows operators to keep both hands on the steering wheel while adjusting ground speed and direction.

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5/3 BANK STADIUM,

Precision Turf/Kennesaw State University Kennesaw, GA

Category of Submission: College Sporting Grounds
Sports Turf Manager: Shane Hohlbein, CSFM
Title: Sports Turf Manager
Education: Bachelor of Science Field of Study: Turfgrass Science
Experience: I have had a wide array of experience in the sports turf industry. During my time at The Ohio State University I worked for Camargo Country Club and Golden Bear Golf Club participating in internships to further enhance my education. Following graduation I joined SMG/Jacksonville Jaguars as the second assistant sports turf manager for two seasons maintaining the stadium and three practice fields. I then moved back home with my wife to Cincinnati where I worked for Hamilton County/Cincinnati Bengals for a season maintaining the stadium, practice fields, and landscape areas. Wanting to gain more experience, and be more well-rounded I found a job with The Motz Group in Cincinnati. Worth for The Motz Group helped me learn the fields from the ground up. I got to work on several aspects of turf construction, as well as natural/synthetic field maintenance. After leaving The Motz Group I found myself back in the southeastern US working for Precision Turf LLC, with whom I am still currently employed. I oversee our maintenance division in metro Atlanta maintaining more 70 acres of bermudagrass fields with six other employees and one summer intern. My crew and I also get the pleasure of installing and maintaining temporary soccer fields all over the country, which comes with a whole

new set of challenges. These temporary surfaces are installed for international competition and friendly soccer matches at venues in the US that do not have natural grass surfaces.

Full-time staff: Jared Kent, Ben Wolosick, Madison Stone, Austin Smith

Original construction: 2010

Rootzone: 100% sand

Turfgrass variety: 419 bermudagrass overseeded with perennial ryegrass

Overseed: The field is overseeded in the fall (depending on schedule and weather) with perennial ryegrass at a rate of 15 lbs./1000 sq. ft. We use Land Pride seeders to create good seed to soil contact, along with dragging the seed into the canopy, applying 18-24-12, and watering lightly throughout the day.

Drainage: USGA Profile

Sporting Grounds: "With lacrosse, we have found wear to be a much greater issue in the goal mouth areas than we find in any other sport we manage. Wear is so excessive that we have to resod the goal creases several times a year to keep the surface safe for our athletes. We aerify these high traffic, high wear areas as much as time allows. With the majority of the game happening in the crease areas this is where you get the most foot traffic and compaction. Seeding these areas a few days before each match, as well as applying a Potassium Silicate product to increase rigidity helps withstand the constant abuse."-Shane Holbein, CSFM

Why STMA should consider your field a winner?

5/3 Bank Stadium plays host to a multitude of world class sporting, and non- sporting events outside of our realm of being a lacrosse venue for the Kennesaw State University Owl's women's lacrosse team, and now the home venue for MLL Atlanta Blaze.

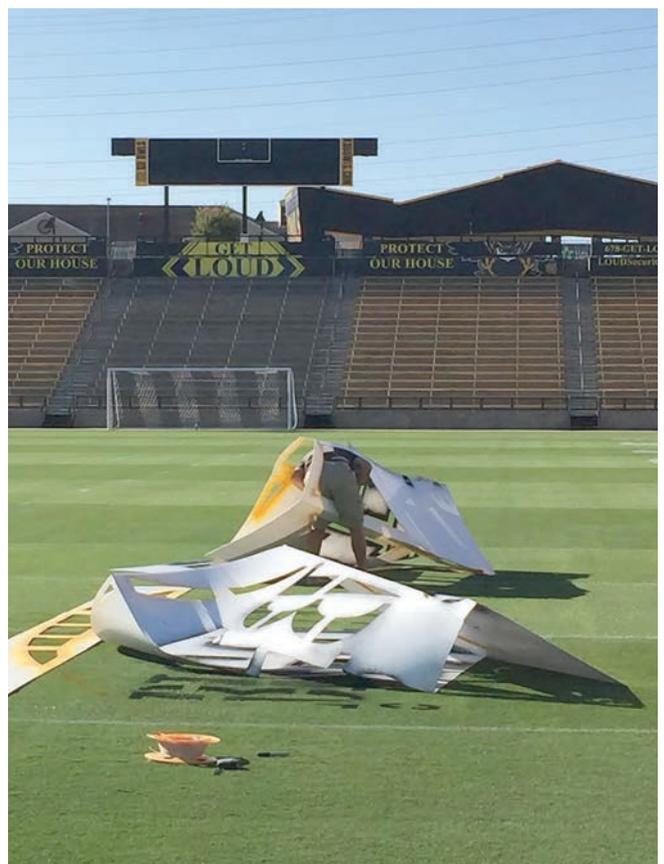
5/3 Bank Stadium is also the centerpiece for Kennesaw State University's "Sports and Entertainment Park." In the past 12 months we have hosted a wide array of events including: KSU football (4 games/4 walk-thrus/4 camps/scrimmage), KSU soccer (11 games/11 walk-thrus), Hunter Hayes concert, Owl-O-Ween (10's of thousands of patrons + hot air balloon rides in the stadium (3 days), band practice, International Women's World Rugby 7's (22 matches), cheerleading practice, USA Women's Soccer commercial shoot, MLL Championship, MLL commercial shoot (3), ACC Men's Lacrosse Championships (4 games), ASUN Women's Lacrosse Tournament (4 games/8 walk-thrus), LB3 Lacrosse Match (Virginia/Northwestern)(1 game/2 walk-thrus), LB3 triple header lacrosse matches (Hobart/Sienna, Duke/Denver, and Notre Dame/Georgetown)(3 games/6 walk-thrus).

Aside from the challenges provided to us by Mother Nature (severe drought), we also faced a big challenge of the top, middle and bottom heavy schedule. With the stadium personnel wanting us to keep the ryegrass as far into the inaugural Atlanta Blaze season as possible this gave us no window for transition. There is a reason they call it "Hotlanta," because come the middle of July the ryegrass had checked out, and we were left with approximately 30% bermudagrass cover due to the competition and relentless schedule. This left us scratching our heads on our plan of attack now. With only 5 weeks to spare before the first home KSU soccer match it was time to throw anything and everything we had at the field. This led to many sleepless nights.

We got on a very, regimented program for the next 5 weeks applying ammonium nitrate every 7 days, foliar "bombs" every 7 days, different aerification practices every 7 days, light and frequent topdressings, spiking, as well as applying a soil enhancer (Mirmichi). Along with this we sodded 43,000 sq. ft. of the surface with plastic grass 3 weeks before the season. When August 22, 2016 rolled around we had 90% coverage. This field made a remarkable transformation in a very tight timeframe, and I am very proud of my staff ("Miracle Workers") for making the impossible-possible. It really portrays what hard-work, dedication, teamwork, and a little blood, sweat and tears will let you accomplish. This is why Kennesaw State University's 5/3 Bank Stadium deserves the title of "STMA Sporting Grounds (Collegiate) Field of the Year!"

SportsTurf: What attracted you to a career in sports turf management?

Holbein: I always knew growing up that I wanted pursue something outdoors, in the elements. Sitting behind a desk in a cubicle was just not going to cut it. I started off in landscape architecture at The Ohio State University and quickly learned they





offered a degree in turfgrass science. Thinking the same thing that many individuals I come across, “That is really a major?” I did some research, and decided this was the career path that I was going to pursue. One of my good friends was working at a private golf club in the Cincinnati area, and mentioned they were hiring grounds crew members, so I hopped onboard, and have never looked back. After college is when I transitioned to the sports turf side of the industry accepting a job with the Jacksonville Jaguars/SMG. This sparked an even greater interest and passion for me in the turf industry. I could not have asked to be surrounded by a better group of individuals than those in the sports turf industry. The positive energy and constant networking to get better day in and day out is unparalleled to the rest.

SportsTurf: What are your biggest challenges in providing excellent playing surfaces? And how do you approach those challenges?

Holbein: The biggest challenges we face are scheduling, communication and weather. I believe these three things go hand in hand. Our field is in constant use from athletic events, band practices, cheerleading practices, commercials, photoshoots, corporate events, concerts, etc. Needless to say all parties involved need to communicate with each other regarding events and maintenance practices scheduled, so that everyone is on the same page.

Everyone involved needs to be aware of the repercussions certain events can cause, and what could happen should we get inclement weather. By creating a good line of communication we can then figure out timing of certain practices, as well as having a backup plan should something go awry. I think it is vital to have face-to-face discussions, as well as having the items discussed formulated into an email, so there is nothing lost in translation. I think this helps give the turf manager an understanding of how to layout his/her schedule to produce the greatest results, as well as giving the client a platform to host their events with both parties understanding how to keep the integrity of the field at its highest level.

SportsTurf: What changes if any are you considering or implementing for the winning field in 2017?

Holbein: I think that every year that passes allows for my crew and I to learn what works and what doesn't. This in return helps us educate ourselves on how to grow as turf professionals to create a program that allows us to get better and more efficient each and every year that passes. We have really ramped up our cultural practices (hollow/solid tine aerification, spiking, deep tine aerification, and Air2G2) in the past few years. We are trying to punch some kind of hole in the ground every 7-10 days during the growing months. This has shown great benefits and tremendous results above and below the surface. In return this helps us get through our heavy schedule with a safe and aesthetically pleasing athletic field.

SportsTurf: What’s the greatest pleasure you derive from your job?

What’s the biggest headache?

Holbein: The greatest pleasure I derive from my job is the end product. It is a great feeling when you can look at all of the blood, sweat and tears you and your crew have invested into a field to achieve nothing short of the best, and having the results speak for themselves in the end. It hits a soft spot when outside parties tell my crew how great the field looks. I think this gives them a sense of accomplishment, and shows them that all those hot days and long nights really paid off in the end.

The greatest headache of my job is scheduling. There are too many day-to-day variables. This really puts a kink in things when one items changes. This generally means that the whole day then needs to be flipped upside down, and/or even the rest of the week. The challenges faced with scheduling haunt me in my dreams, but it is just part of being a turf manager that you learn to accept or try to accept.

SportsTurf: What’s the best piece of turf management advice you have ever received?

Holbein: The best advice I have received is, “You can’t control the weather.” Mother Nature is going to do what she wants, and we as turf managers need to adapt to the situation and come up with solution. I think we plan for the worst, and hope for the best.

SportsTurf: How are using social media at work?

Holbein : I believe that social media is a vital tool for turf managers. This allows us to network with other turf managers around the country that we would not normally communicate with to get feedback on what practices they have tried or are trying currently, and what results they are achieving. Our industry consists of a lot of trial and error. No one person has all the answers, so even if you are already doing a certain practice, maybe someone else has a more efficient way of achieving better results. It is great to be a part of an industry where everyone is connected, and feeds off of each other’s ideas to achieve a great end product for its users.

SportsTurf: How do you see the sports turf manager’s job changing in the future?

Holbein : I believe the sports turf industry is finally being recognized by owners, players, and the community as an incredibly, valuable asset. I think the portrayal of the “grass cutter” has vanished. Our industry continues to evolve, and we as sports turf managers are called upon more and more every day to achieve tasks out of our normal realm. Athletic fields are being used at a very high volume for many different events, and us as field managers need to adapt to what is thrown at us on a daily basis, and focus on the task at hand. Things are only going to intensify in the future, and if we are able to keep producing at high levels by doing tasks outside of our normal job description this will make us that more valuable to the organization we are representing. **ST**



State of the Industry survey: how do we stack up?

STMA partnered with Turf Republic to gauge overall progress in the sports turf industry. In late October 2016, STMA sent a 70-question electronic survey out to sports turf managers and associates to solicit their opinions. Thirty-one percent of those who opened the survey completed it. Although a bit lengthy, the survey questions were primarily radio-button responses and the survey took about 8 minutes to complete.

Sixty-nine percent say they do not have an internship program; **31 percent** do have one.

47% do NOT track weather data for your facilities.

Nearly **55 percent** shift fields or resize fields to manage traffic.

26% do NOT have a yearly CAPITAL budget
46% do NOT have a capital replacement budget.

61% do NOT test field hardness.

28% of sports turf managers are their own mechanics; **51%** have an on-site mechanic and **21%** contract out mechanical work.

Mowing heights vary quite a bit: **35 percent** mow less than 1 inch; **27 percent** mow greater than 2 inches.

60% do NOT use moisture meters or sensors.

Half of you utilize pesticide or fertilizer early order buying programs.

68% spend less than \$10,000 annually on pesticides and **64%** spend less than \$10,000 annually on seed.

Sixty-three percent are using surfactants or wetting agents in their irrigation program.

100% are doing soil tests.

Fifty-six percent of you choose to use synthetic fertilizers first, followed by in nearly equal percentages organic (**23 percent**) and foliar (**22 percent**).

Ninety-eight percent of you are provided a health benefits package by your employer.

Ninety-six percent of you are provided a 401(K) or similar retirement savings plan by your employer.

Ninety-four percent of you have a budget that you need to follow.

Ninety-two percent of you go to STMA to access information and resources to help you manage your sports fields, followed by 87 percent who use the internet for searches and websites (could select more than one answer).

Seventy percent of you paint your team or organization logos on your fields (in-house).

Sixty-four percent of warm-season turf managers overseed.

40% of you grow Kentucky bluegrass and 37% of you grow bermudagrass.



The median number of times you mow weekly

Student Challenge winners

Congratulations to all STMA Student Challenge participants for their exceptional performance on the 2017 exam. The Student Challenge is presented by SAFE, Founding Partner Hunter Industries, and supporting sponsor Ewing Irrigation. Nine 2-year teams and 26 4-year teams competed for \$5,000 awards in each division.

Winning the 2-year competition was Mt. San Antonio College – Team 207. Penn State University – Team 208 took second place, and Mt. San Antonio College – Team 201 took third place.

Winning the 4-year competition was Penn State University – Team 422. Iowa State University – Team 416 took second place, and Virginia Tech – Team 409 took third place. See stma.org for a full list of results.

Top finishers

- 2-Year 1st place: Mt. San Antonio College: Gretchen Heimlich, Ryan Ramirez, Sean McLaughlin & Ashley Simpkins.
- 2-Year 2nd place: Penn State University: Colin Murphy, John Keeler, Adam Goedde & Bradley Jackson.
- 2-Year 3rd place: Mt. San Antonio College: Jeff Truschel, Trisha Moreira, Zoe Jacobson & Osmond Van.
- 4-Year 1st place: Penn State: Curt Moore, Derek Buganza, Kevin Heimann, & Tom Goyne.
- 4-Year 2nd place: Iowa State: Tim Dalsgaard, Matthew Collingbourne, Zachary Olinger & Mitchell Countryman.
- 4-Year 3rd place: Virginia Tech: Andy Kinch, Joshua Lillard, Andrew Miller & William Lannon.

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.sifmanj.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.

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The 4-Year winners, Penn State Team 422. Jeff Salmond, CSFM, immediate past president of STMA, at left, presents the team its award in Orlando. For Penn State, L to R: Curt Moore, Derek Buganza, Kevin Heimann, and Tom Goyne.



The 2-Year winners, Mt. San Antonio College Team 207. Jeff Salmond, CSFM, immediate past president of STMA, at left, presents the team its award in Orlando. For Mt. San Antonio, L to R: Ashley Simpkins, Gretchen Heimlich, Ryan Ramirez and Sean McLaughlin.

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Email: (required) _____

1 What is your company's primary business? (check ONLY ONE)

- F Sports Complex G Athletic Field and/or Park Architect/Designer
 T School, College or University P Park
 H Other (please specify) _____

2 Which of the following best describes your title? (check ONLY ONE)

- A EXECUTIVE/ADMINISTRATOR — President, Owner, Partner, Director, General Manager, Chairman of the Board, Purchasing Agent, Athletic Director
 B MANAGER/SUPERINTENDENT — Superintendent, Landscape/Ground Maintenance Manager, Foreman, Supervisor
 C GOVERNMENT OFFICIAL — Government Commissioner, Agent, Other Government Official
 D SPECIALIST — Architect, Designer, Consultant, Agronomist, Horticulturist, Certified Specialist
 F COACH
 E Other (please specify) _____

3 Do you have the authority to buy, specify or recommend products and/or services for your business or organization?

- Y Yes N No

4 Yearly operating expenditures (excluding salaries)

- F Over \$1 million C \$50,001 - \$100,000
 E \$500,001 - \$1 million B \$25,001 - \$50,000
 D \$100,001 - \$500,000 A \$25,000 and under

5 Also send a free subscription to the following people at the same location

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Q&A with Pamela Sherratt

Questions? Send them to 202 Kottman Hall, 2001 Coffey Road, Columbus, OH 43210 or sherratt.1@osu.edu

Or, send your question to Grady Miller at North Carolina State University, Box 7620, Raleigh, NC 27695-7620, or email grady_miller@ncsu.edu

Weed control during spring seeding

Q: We are getting ready to overseed our soccer field this spring. What weed control options are there?

A: Successfully growing cool-season turf from seed in the spring can be a challenge because the weed pressure is so great, which is one of the reasons why the recommended time to do renovation is in the fall. In the real world however, athletic fields are in a constant state of renovation and so seeding is a season-long operation.

Weeds that emerge in spring, like crabgrass, prostrate knotweed, yellow nutsedge, goosegrass and annual bluegrass are particularly troublesome on athletic fields because they can germinate and establish quickly, even on compacted soils. Weed seed present in the soil is laying dormant just waiting for an opportunity under the right environmental and cultural conditions to invade a weakened turf with bare soil. Because weed pressure is so great in the spring and early summer months, it is important that the soil is not disturbed (avoid tilling as this will bring up weed seeds) and that the seedbed be treated with an herbicide that does not adversely affect germination of the desired grass seed.

There are several approaches to using an herbicide during the seed establishment period. Following is a summary of those options, based on years of herbicide trial work by Dr. Dave Gardner. One strategy is to seed in early spring and then after the seedling turf has established, apply an herbicide with pre and early postemergence activity, such as dithiopyr (Dimension, others*). This strategy requires very careful timing, and on most athletic surfaces, overseeding is not a once



per year operation. Once the application of dithiopyr is made, as is the case with most preemergence herbicides, future overseeding operations must be delayed according to the label.

In fact, on areas that you plan on seeding or over-seeding in late spring or summer, hopefully you did not apply a preemergence herbicide. If you did, then be aware that almost all of the preemergence herbicides on the market are very effective at controlling not only weed seedlings, but also the seedlings of our desired turfgrasses. Fortunately, there are three preemergence herbicides that are labeled for use at seeding time: siduron (Tupersan), mesotrione (Tenacity), and topiramazone (Pylex).

Siduron has been available for use in turf for many years. It is safe for use on seedling turf. Follow the label directions carefully. When used properly, siduron will reduce crabgrass, goosegrass, foxtail, and many summer annual broadleaf weeds by about 80%.

Mesotrione is in a unique class of chemistry and this product has a very diverse label, including pre- and

postemergence control of both broadleaf weeds and annual grasses. It also controls sedges preemergence and certain perennial weedy grasses postemergence. One of its key uses is the preemergence control of annual grassy and broadleaf weeds in newly seeded turfgrass. When used as directed, mesotrione will result in nearly complete control of crabgrass, goosegrass, foxtail, and many summer annual broadleaf weeds. But, it will not affect the growth and development of the seedling turf. Most effective use of this product is to apply it to the soil surface right after the seeds have been raked in but before mulch is applied.

You can then begin to irrigate as you normally would to establish seedling turfgrass. Mesotrione is very safe to seedling turf. However, some phytotoxicity has been reported if it is applied to young turfgrass seedlings. If you are using multiple applications of mesotrione as part of a program to control stubborn weeds, such as creeping bentgrass, then you want to avoid overseeding or reseeding

Continued on page 27

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