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SportsTurf

DECEMBER 2018

SPORTS FIELD AND FACILITIES MANAGEMENT / www.sportsturfonline.com

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PONY Baseball *volunteer* wins FOY

ALSO INSIDE

- Bermudagrass shade and drought stress
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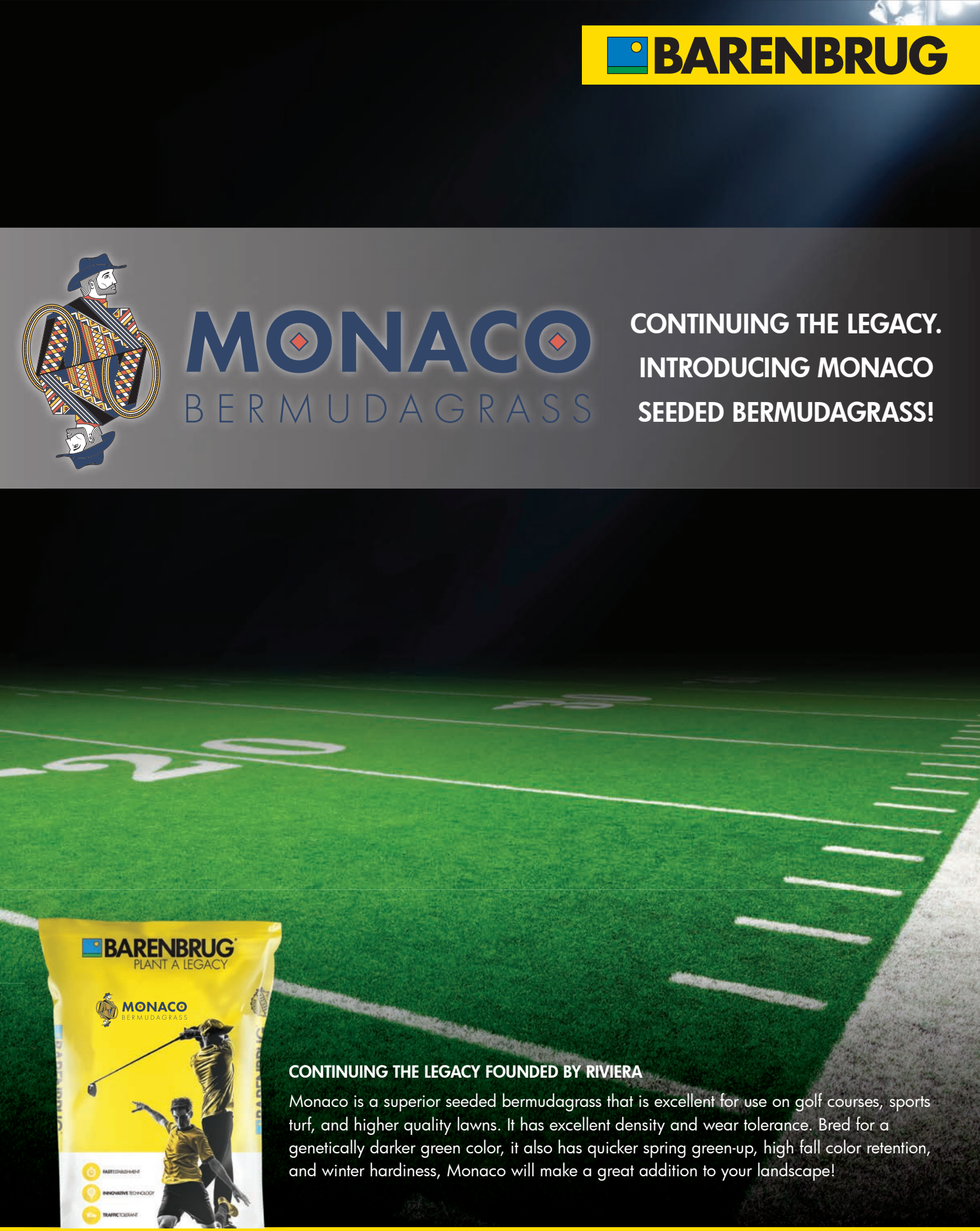

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STARTING LINEUP

SportsTurf

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FEATURES

DEPARTMENTS

ON THE COVER

pg 44

On the cover: Andy Ommen is a volunteer for the McLean County PONY Baseball program in Bloomington, IL; he has a full-time, non-green industry job. Andy relies on his relationships with STMA members for advice but it's mostly his working long hours solo on his fields that make them noteworthy.

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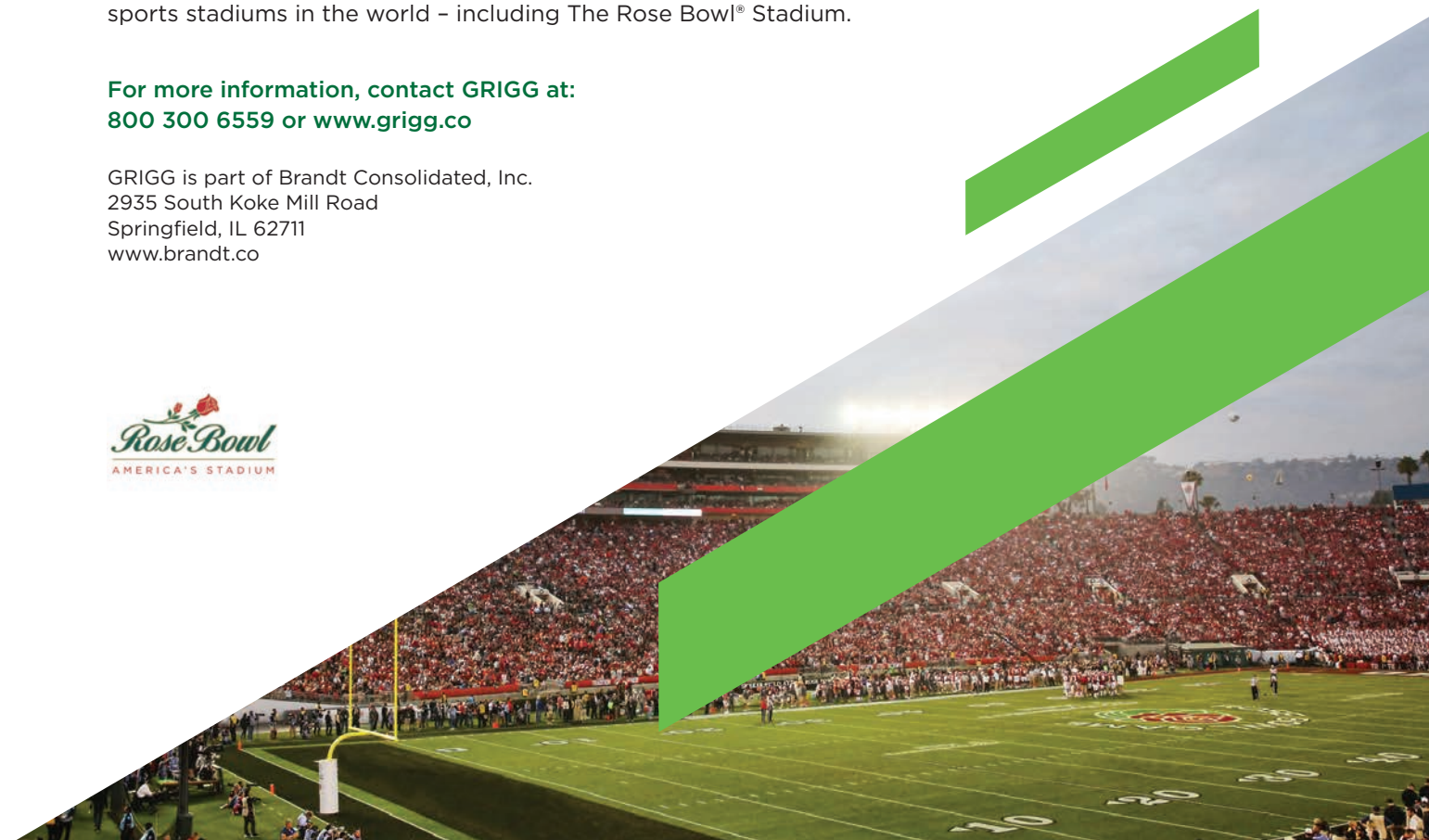

FROM THE SIDELINES

The next generation

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

IN HIS "THE *SPORTSTURF* INTERVIEW" on page 26, James Bergdoll, CSFM, STMA's Board rep for Parks & Rec, points out that the sports turf management industry is just one of many that need to "reach out to potential employees at a younger age." There is increased competition for skilled workers across the country and a growing movement to address this shortage of career and technical education (CTE) students.

According to series from NPR that explores how schools can prepare young people for good middle-class jobs of the future, CTE programs that feature academically and professionally rigorous classes send graduates off to postsecondary programs at high rates. The authors said CTE programs may be uniquely positioned to prepare young adults for the future of work. Nurturing connections to local businesses, where students may experience the workplace via internships, is another key to retaining young people, they said.

CTE is what older generations called "Vo-Tech"; NPR says CTE "is in some ways still caught in the shadow of what experts call 'grandpa's vocational school.' Historically, such programs were limited to a handful of skilled trades that did not necessarily lead to well-paying jobs."

One model might be what's going on in Hickory, NC where Steve Peeler, CSFM, is director of the hort & turfgrass management program at his alma mater, Catawba Valley CC. "CVCC has a lot of great things happening in our sports turf program," Steve emailed recently. "We are introducing juniors and seniors at three high schools in Catawba County to sports turf management and working on athletic facilities on campuses, as well as classroom time."

Does your local school district offer classes in horticulture or turf management? Where are your future crew members today?

Steve Wightman, Hall of Famer

SOMEHOW WE OVERLOOKED earlier this year when Steve Wightman was inducted the Major League Baseball (MLB) Groundskeepers Hall of Fame.

Before retiring in 2012, Wightman managed sports fields for more than 39 years (36 years at the professional level). Active member in the sports turf industry since 1978, he served as STMA President from 1984-1986. Wightman is only the 10th groundskeeper to be inducted into this Hall of Fame.

As Head Grounds Manager at Denver's Mile High Stadium (Broncos/Bears) from 1976-1988 and Field Manager from 1988-2012 at San Diego's Jack Murphy Stadium / Qualcomm Stadium (Chargers/Padres, San Diego State), his lasting impact continues today. From preparing a MLB All-Star game (1992), World Cup (1994), World Series (1998), two Super Bowls (2003, 1998) as well as numerous playoff and championship games, Wightman sits in elite company.

"I am incredibly humbled to win this prestigious award and join the legendary cast of sports turf managers honored before me," says Wightman. "I couldn't have achieved this without the unwavering support of my family, friends and colleagues throughout the years."

Names of inductees are inscribed on the Gary Vanden Berg Trophy, named for the late Milwaukee Brewers groundskeeper: Emil Bossard (Indians), George Toma (Royals), Joe Mooney (Red Sox), Dick Ericson (Twins), Harry Gill (Brewers), Pat Santarone (Orioles), Pete Flynn (Mets), and Marty Schwab (Reds). ***/ST/***

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

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SALES REPRESENTATIVES
Chris Pelikan
Senior Account Manager - East
Phone: (763) 383-4408
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
Managing Art Director:
Dodi Vessels
Associate Art Director:
Phil Tippin
Sr. Creative Services Project Manager:
Angela Scott
Production Coordinator
Samantha VanKempen

SUBSCRIPTION SERVICES
Phone: (847) 513-6025
Sportsturf@omeda.com

REPRINTS
Brett Petillo
Wright's Media
bpetillo@wrightsmedia.com
(281) 419-5725, ext. 118

DIRECT MAIL LIST SALES
Kris Grauer
NPS Media Group
kgrauer@npsmediagroup.com
(203) 822-7933

EPG MEDIA& SPECIALTY INFORMATION

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SportsTurf
MANAGERS ASSOCIATION

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

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PRESIDENT'S MESSAGE

MERRY CHRISTMAS and HAPPY HOLIDAYS!!!

Sarah K. Martin / CSFM / sarah.martin@phoenix.gov / @neongrapefruit

WISHING YOU AND YOURS a most wonderful season of joy!

Registration for Conference is in full swing. If you haven't made your plans to join us in Phoenix, you still have time to get signed up! Conference is a great time to learn more about the business, science, and hands-on portions of a sports turf manager's job. It is also a marvelous time to network and meet other like-minded folks. I find that after the Conference, I am excited and rejuvenated for getting into the next season (which, for me, in Phoenix is actually ongoing from November-April). I hope you all can join us as we celebrate what we do!

IMAGE ©ISTOCKPHOTO.COM/ZERENN

While this is a season of giving and happiness, it is also a time of high stress and anxiety for quite a few of us. We are working hard to make our fields the best they can be (often in inclement weather), and planning for the next season. All the while, we are also trying to buy gifts, plan parties and gatherings, travel to destinations near and far, and to cram as much merriment as possible into a very short amount of time.

I challenge each and every one of you to take a moment each day to remember what you are grateful for. My best friend and I text each other a list of "gratefulness" each day, listing up to 10 items that are blessings in our lives. This has helped us immensely to reduce the overwhelming feelings of stress in our day-to-day lives. If I'm feeling overwhelmed, I can look at the previous texts and see the things that have brought me happiness and calm in the past days and weeks.

I saw this quote from Eleanor Brown: "Self-care is so important. When you take time to replenish your spirit, it allows you to serve others from the overflow. You cannot serve from an empty vessel."

Here's to a magnificent holiday season and for the replenishment of our vessels! ***/ST/***

Sarah K. Martin, CSFM

@UKTURF

Lexington, KY October 3

If you've ever wondered about the importance of variety trials, check out the differences in gray leaf spot tolerance in this perennial ryegrass test. @kmorris_NTEP

@TAR_HEELS_TURF

Chapel Hill, NC October 1

5 days post fraze mow + seed and we're getting some life back in these fields. Temps in the mid to upper 80's should help a lot this week.

@TALLENTTURF

Hickory, NC October 18

Non overseeded Tiftuff Bermuda on October 18th in Western NC #noryegrasshereyet

@INDYINDIANSTURF

Indianapolis, IN October 17

They see me levelin...

@ZAKPETERSON9

Milwaukee, WI October 21

What's worse than losing game 7 of NLCS? Installing flooring at 6 am the day after for Ed Sheeran

@IOWATURFGUY

Iowa City, IA October 19

Extremely proud of our @HawkeyeSoccer. If the TEAM doesn't respect the field, then it won't look like this for Senior Day. Movement of Drills, Workouts and Goals is KEY. Thanks you Players and Coach's for respecting the Grass #Respect #FightForIowa #ThanksSeniors #BigTen

@TRAVISMFOX5

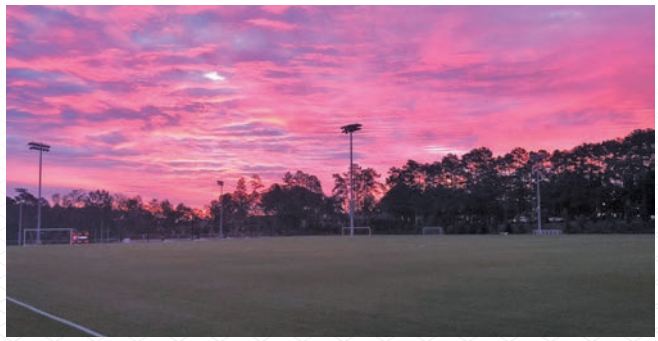
Atlanta, GA October 15

Officials find roasted pig in luggage at Atlanta airport http://dlvr.it/QnS12Y -- @FOX5Atlanta

@GBREEDEN1

Knoxville, TN October 24

Spraying October Poa timings in West TN with @UTTurfWeeds Is that October snow? Cotton at harvest is pretty crop.



@ATL_TURF88

Atlanta, GA October 25

Beautiful morning at the @ATLUTD training ground. Let's get it!

Implications for combined shade and drought stress on bermudagrass turf

// By CHARLES FONTANIER, PHD, AND MANOJ CHHETRI

Photo courtesy of Andrew Marking, 2017 Stars & Stripes Mowing Contest winner, Quad Cities (IA) River Bandits.

An estimated 25% of the turfgrass is grown under shade. Bermudagrass performs poorly in shade in compared to other warm-season species, although there is some variation among the bermudagrass cultivars in this regard. Turfgrass evapotranspiration (ET) rates are sensitive to solar radiation and therefore can be much lower in shaded environments. In southern California, ET of lawns under trees was lower than without trees by 0.9 to 3.9 mm d-1. A different study found that turfgrass shaded either by trees or by shade mesh reduced total water use rate by at least 50%.

In a turfgrass system, shade stress often co-exists with drought stress. For some instances, shade can be beneficial in that it reduces the evaporative demand and heat load on turf. However, shaded plants that have weak root systems may suffer from soil moisture stress more quickly than their deep-rooted and full sun versions. Similarly, it is often thought that a little bit of shade is good but too much can lead to big problems – particularly if soil moisture becomes limiting.

To better understand how drought and shade stresses interact, we conducted a greenhouse study on three bermudagrass cultivars. The objectives of this research were 1) to measure the effect of drought stress on shaded and non-shaded bermudagrass turf quality and water use rate, and 2) to determine if the response to shade, drought, or combined shade and drought differ among bermudagrass cultivars.

Materials and methods

THE EXPERIMENT WAS CONDUCTED at the Oklahoma State University Horticulture Research Greenhouse located in Stillwater, OK. Grasses were established in 18-inch long, 4-in diameter polyvinyl chloride pipe (PVC) with a flat bottom cap. Pots were well watered to avoid drought stress during

CONCLUSION

Shade reduced the severity of drought stress to some extent by reducing the evaporative demand. There is evidence that shade tolerance of the turfgrass can have a role in tolerance of the combined shade and drought stress as well. This study was among the first to directly investigate the combined effects of shade and drought stress on bermudagrass turf. Results will contribute toward improving irrigation management of shaded turf sites and the long-term sustainability of turfgrass management.

establishment and before starting treatments. Fertilizer was applied at 0.25 lb N 1000 sq ft-1 every week using 20-20-20 water-soluble fertilizer (JR Peters Inc., Allentown, PA) throughout the study. Grasses were clipped at a height of 2 inches once a week and clippings were removed.

Once the study began, pots were placed in either non-shaded or shaded areas of the bench. Shade treatment was applied using a black shade fabric nominally rated to reduce incoming light by ~50%. Three bermudagrass cultivars and two irrigation levels were randomly assigned to each light treatment block. The three cultivars were 'Celebration' common bermudagrass, 'Latitude 36' hybrid bermudagrass, and 'Patriot' hybrid bermudagrass. After 4 weeks of acclimation to shade treatment, irrigation treatments were applied once per week for a 6-week period to replace either 100% actual ET or 50% actual ET.

> "SHADE DOES HAVE SOME SHORT-TERM BENEFIT TO THE PLANT UNDER DIMINISHING WATER AVAILABILITY – BUT ONLY IF THE SHADE IS NOT TOO SEVERE."

Visual turf quality was assessed weekly following National Turfgrass Evaluation Program (NTEP) guidelines. Ratings were taken on a scale of 1 to 9 (9=ideal turf, 6=minimum acceptable turf, and 1=brown dead turf). Normalized difference vegetation index (NDVI) was measured every week using a Spectral Reflectance Sensor (Decagon Devices Inc., Pullman, WA). Leaf relative water content was measured at 0, 4, and 6 weeks after treatment (WAT) to estimate the hydration level of leaves, thus indicating the amount of drought stress within the plant. Plant cell membrane injury due to drought stress was estimated using the electrolyte leakage method.

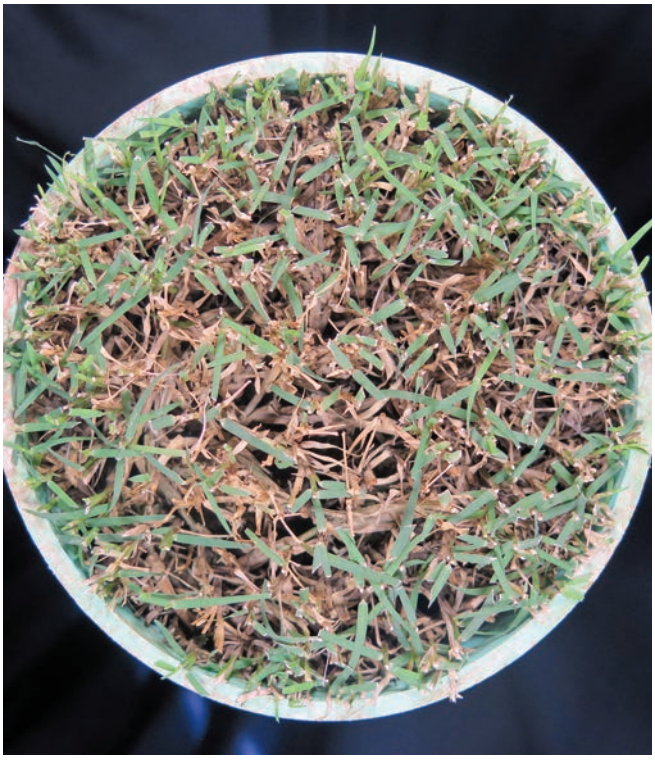
Evapotranspiration rates were measured gravimetrically by weighing the pots weekly. Cumulative water use for each treatment was determined as the sum of all water applied during the entire study.

The study was arranged in 2 x 2 completely randomized factorial design. All data were analyzed using analysis of variance (ANOVA) with the general linear model procedure (GLM) in SAS software version 9.4. Treatment means were separated by Fisher's protected least significant difference (LSD) test at $p < 0.05$.

Results

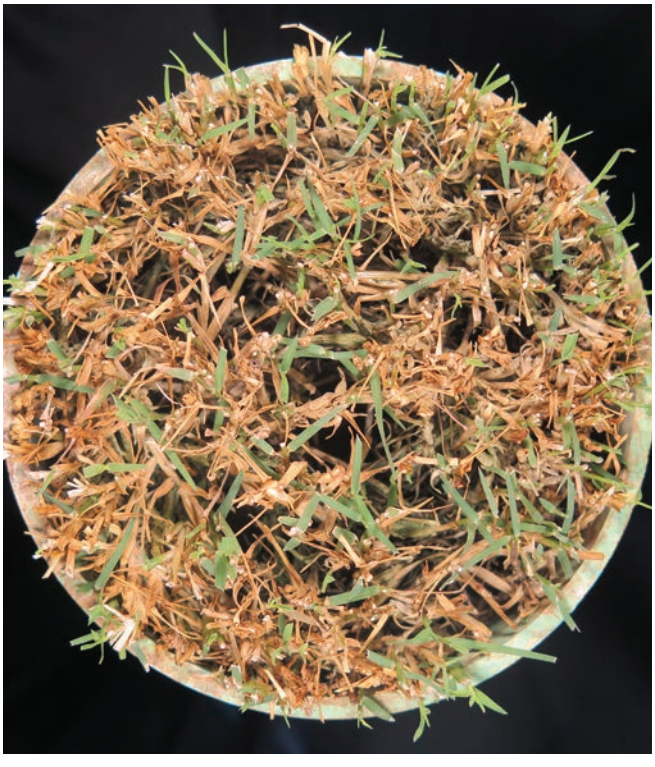
THE NON-SHADE BLOCK received an average of 26.8 mol m-2 d-1 PAR, while the Shade block received an average of 9.7 mol m-2 d-1 (64% of non-shaded) PAR during the treatment period.

Patriot hybrid bermudagrass after 5 weeks of shade and/or drought stress compared to non-stressed control plants.



Patriot – shad only

Patriot - Drought only



Patriot - Drought plus Shade

Patriot - No shade No drought

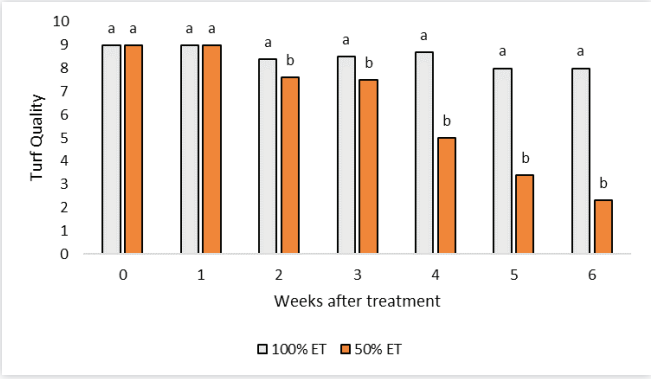


Fig 1. Turf quality scores for the non-shaded block over time. A score of 9 was considered best, and 6 was considered acceptable. Pairs of columns having similar letters are not significantly different.

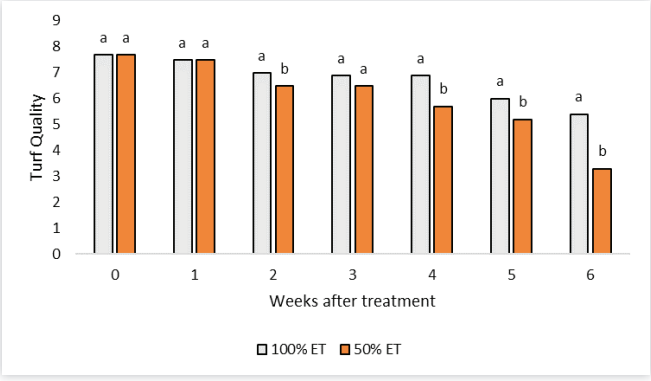


Fig 2. Turf quality scores for the shaded block over time. A score of 9 was considered best, and 6 was considered acceptable. Pairs of columns having similar letters are not significantly different.

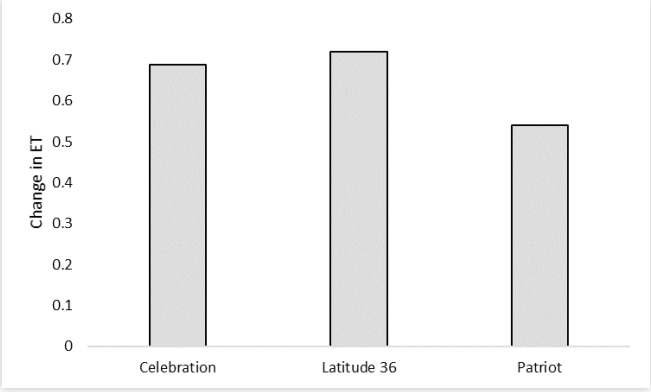


Fig. 3. Reduction in ET due to shade treatment (fraction of non-shaded treatment) for each cultivar.

In just 4 weeks of treatment, shade reduced turf quality for both the well-watered and deficit irrigated pots, most notably in the cultivar Patriot (Fig. 1 and 2). Deficit irrigation treatments reduced turf quality similarly for each cultivar, although not as rapidly when combined with shade. At the conclusion of the study, deficit irrigation resulted in very poor turf regardless of cultivar or shade treatment. Similar results were seen for NDVI measurements.

Either shade or drought alone reduced the RWC of leaves, most notably for the cultivar Patriot. Differences in RWC between well-watered and deficit irrigation pots were diminished under shade, presumably due to the effect of cooler temperatures on evaporative demand.

Electrolyte leakage is a standard method of quantifying the stress a plant feels at the cellular level. In this study, deficit irrigation resulted in higher electrolyte leakage (more stress) at both the 4 and 6 weeks after treatment. Interestingly, shade also increased electrolyte leakage over time, most notably for the cultivar Patriot. By the end of the study, deficit irrigation resulted in an electrolyte leakage value of 59% for shaded pots and 72% for non-shaded pots. However, for a given leaf hydration level (relative water content), shaded pots were under more stress as indicated by greater leakage values. Cumulative water use varied by cultivar and shade treatments. Specifically, Patriot used the most water in non-shaded conditions but the least under shaded conditions. This general pattern was evident for both deficit and well-watered irrigation treatments (Fig. 3).

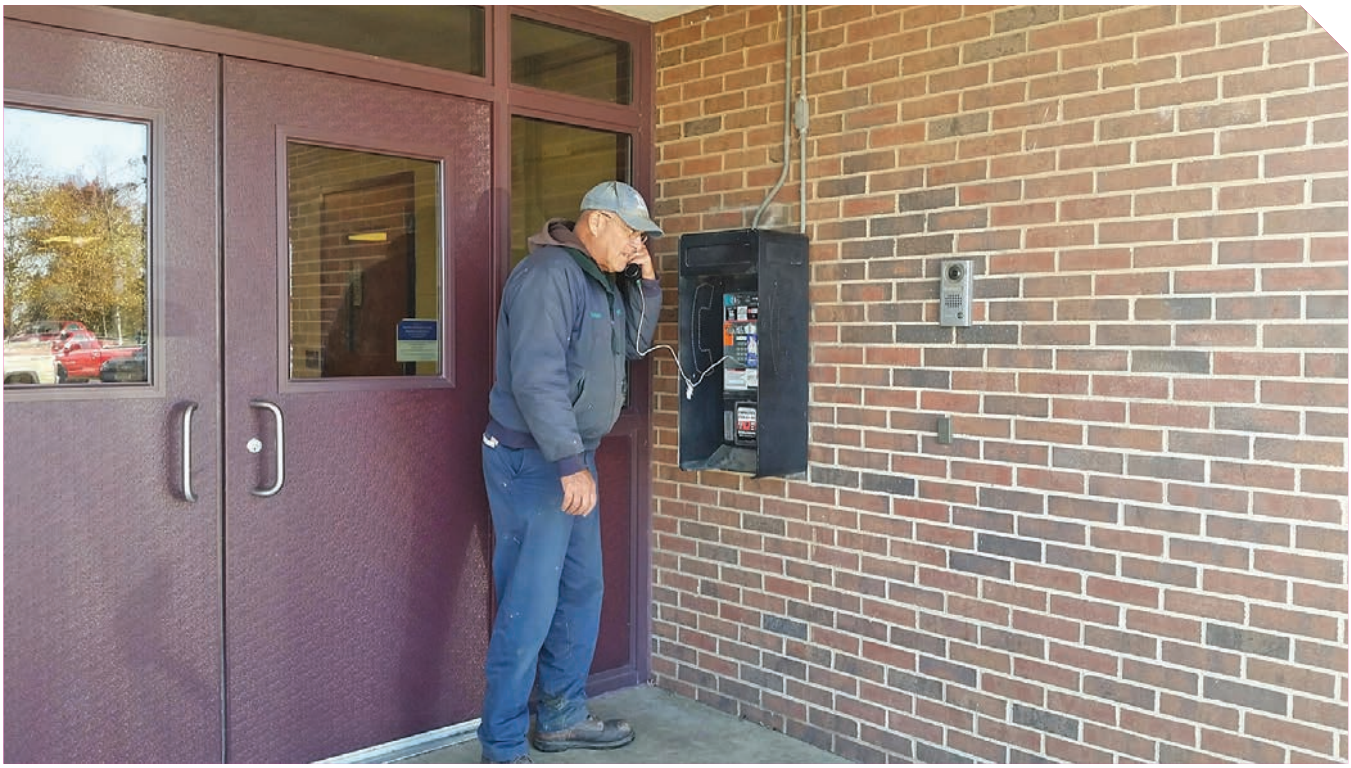
What does this all mean?

REDUCTION OF TURF QUALITY and NDVI due to shade alone or drought alone has been commonly reported in previous research. The apparent delay in drought stress under shaded conditions is related to a similar delay in soil water depletion due to the lower evaporative demand. Whether these findings would reproducible under longer-term shade pressure, wherein rooting depth has been compromised, is unclear. Nevertheless, shade does have some short-term benefit to the plant under diminishing water availability – but only if the shade is not too severe.

Patriot is known to have poor shade tolerance even in comparison to other bermudagrasses. In contrast, Celebration has typically been considered a relatively shade tolerant bermudagrass cultivar. More recently, Latitude 36 has been reported to have good shade tolerance, although not as good as Celebration. Our study is in agreement with much of these previous reports indicating Patriot as being inferior to Celebration or Latitude 36 in regards to shade tolerance. Our findings that the least shade tolerant cultivar (Patriot) incurred the lowest leaf RWC under shade support the theory of a linkage between leaf hydration level and photosynthetic efficiency. The relatively high water use of Patriot in the non-shaded block and the relatively low water use in the shaded block may be related to this as well. Higher demand for water in Patriot could be one of the reasons for poor performance when subjected to individual or combined stress. More research is needed to further refine these relationships in the hopes that we can identify key properties of bermudagrasses that do well under both shade and drought environments. **/ST/**

Charles Fontanier, PhD, is Assistant Professor, Turfgrass, in the Department of Horticulture and Landscape Architecture, Oklahoma State University. Manoj Chhetri is a graduate research assistant at Oklahoma State.

What apps are you using?



"I do not have any apps on my cell phone only because I do not own a cell phone. Many folks that I have met along my adventure consider me very lucky. I like managing things the old fashion way — phone calls and face-to-face meetings are much more rewarding. There are some apps that I do favor over others: wings and poppers!

-Bernard Luongo, president of STMA's New Jersey chapter.

Weather

■ **WeatherChannel**. "In terms of using apps for work, I mostly use The Weather Channel's. It is pretty accurate when it comes to the radar," says Rick Perruzzi, CSFM, CPRP, CPSI, recreation manager of outdoor athletic facilities, South Portland (ME) Department of Parks, Recreation & Waterfront. "Weather plays a major factor in all turf managers' lives. This is especially true for us, having fields spread out all over the city; it could be raining in one area, but ideal conditions on the other side of town. The hourly and future radar give us the ability to mobilize where we can be the most efficient each and every day. This also holds true for when we are scheduling our weeks out with the long range models," says Shane Holbein, CSFM, sports turf manager for Precision Turf, LLC.

■ **WeatherSTEM**. "We have a weather station mounted in Kenan Stadium, so this app gives us real-time info such as temperature, wind speed, humidity, rainfall, etc. It even has two live cameras we can log in and take look at," says Casey Carrick, director of athletic grounds and turf management, University of North Carolina.

■ **WeatherUnderground**. "I use this for any percentages along with overnight outlooks for the area," says Andrew Marking, head groundskeeper for Quad Cities River Bandits.

■ **WeatherBug**. "I use only 2 apps, Twitter and WeatherBug; the latter is pretty self-explanatory with Mother Nature having a huge impact on what we do, we must stay current with weather and any changes that might happen, says Troy Crawford, FC Dallas director of grounds.

■ **RadarScope**. "This is one of my favorite apps for weather. It is $9.99 but provides pretty great information on the radar and great alerts," says Chrissie Segars, PhD, assistant professor of plant and soil science, University of Tennessee at Martin. "Best app in the business for tracking storms. This is my go-to app when in a weather situation and talking with umpires and team managers.

EDITOR'S NOTE: We asked some STMA members what apps they use, on or off the field, and why they like them. We will continue to pursue and share info on apps most useful to turf managers' lives at work or elsewhere.

The raw data it provides and how up to date it is, I have been able to get it down to the minute a few times with getting the tarp on the field; it has helped us save several games over the past 2 years," Marking says.

- **WDT Weather Radio**. "This is my weather radar when I am on the go. Also with WDT we have a service contract to allow for event management, sports medicine, directors of ops, etc., to have online access for weather without get lightning and other weather alerts," says Jeff Salmond, CSFM, director of athletic field management, University of Oklahoma.

Twitter

"OF COURSE, FOR NETWORKING and following other managers and researchers!" Dr. Segars says.

"**Twitter** I use to promote/advertise the crew's hard work and accomplishments. Twitter is also used to communicate if we are closed, open or delayed. I personally use Twitter to follow other grounds personnel to see what they are doing. There are always tons of new and innovative ideas being tweeted daily. I have also used it to read articles and listen to different STMA classes," says Crawford.

Holbein says, "Twitter is a great tool for turf managers, because it keeps you connected throughout the industry. This app gives you the ability to follow others around the world to share ideas and showcase accomplishments and struggles throughout the year to get better each and everyday. Our industry is very unique in that everyone is willing to reach out and help one another to make the industry grow as a whole. Twitter gives you a great platform to do this in a very quick and easy way."

"Twitter (and **Facebook**, **Instagram**, and **Snapchat**) allow me to contact with other [turf managers] across the country, many of whom I have met and many whom I have yet to meet. This is a great way to be able to see how others are doing cultural practices. There has many things I have seen on social media and then began to implement them here in the Quad Cities," says Marking.

Others

"**WAZE** IS A GREAT APP especially since a lot of universities have begun linking their parking lots for sporting events, Dr. Segars says.

"Living in Atlanta and having athletic fields spread out across the city, I would be lost without this app (literally and figuratively). From the directions to the warnings of red light cameras and cops, to telling me if there is a deer carcass in the road ahead, this app helps me get where I'm going daily safely and efficiently," says Holbein.

Salmond says, "The **Canopeo** app was developed at Oklahoma State by their plant and soil sciences department and the OSU App Center. I use it to help estimate grass density/coverage in wear areas, and potential wear areas, to make help make maintenance and fertility adjustments in high traffic areas."

According to the OSU website, potential applications include: quantifying canopy cover of small grains and row crops; measuring crop damage by freeze, hail, or herbicide; evaluating turf grass stands. Canopeo enables you to add notes associated with each image and upload images to your account so that you can easily review and share the information gathered in the field from your office or at home at anytime. Canopeo automatically records the geographic coordinates and the current date and time so that you always know when and where each image was taken. Also, any existing images in your photo roll can be accessed through Canopeo to calculate the percent canopy cover.

"I have found **Trello** quite handy. So far, it is most useful for managing lists of tasks. Staff who are spread across the Township can move assignments from "To Do" to "In Progress" to "Complete" which has streamlined both the speed and efficacy of our communication. It is much more agile and user friendly than many of the work order-style software offerings," reports Rebecca Auchter, formerly with Cranberry Twp (PA) Parks.

"I will say that the **STMA Conference** app is great when attending the National conference. I find it very useful to have during that week," says Perruzzi.

"**PictureThis** is a great app for identifying plants, especially trees and ornamentals. It is like shazam for plants!" Dr. Segars says.

Carrick says, "**Teamworks** is an app that all of our teams use to communicate to the student-athletes. I have access to the teams we support and can see practice times for each day. If a time changes, it updates and lets us know in real-time."

"This scheduling system that OU Athletics teams use will send updates when changes are made in the system. This is helpful in knowing every outdoor team schedule and when we need to modify field maintenance that was scheduled to occur to another time," says Salmond.

"I don't use a lot of apps, as I have more of the 'old dog' mentality and prefer pen to paper. However in today's world it doesn't beat having a calculator in your pocket. Mrs. Smith was right; I would need math as I got older. And you can't beat asking **Google**, or watching a how-to video on **YouTub**e," says Jeremy Driscoll, grounds supervisor, St. Mark's HS, Wilmington, DE.

Rachio. "We use this for our irrigation system in Kenan Stadium. It's a simple homeowner system, but it works great for our needs. I can control the irrigation from my phone and it tracks water use amounts for each month," says Carrick.

"We use the **Musco Lighting** app to control the lights at all of our facilities. We can set schedules or turn lights on/off from anywhere. We let the coaches use this app as well when they need control of the lights," Carrick adds.

"**Hydrawise**" is Hunter Irrigation's new system. I am able to control the field irrigation from the controller, my desktop computer or from my smartphone. It has been an amazing tool that I have grown to love. I can make sure that the irrigation is turned off one final time as I am walking into my front door or be able to run a syringe cycle from the comfort of my living room couch. It also allows me to track how much water I have used throughout a week and see when I have watered in the past," says Marking.

Marking adds, "I use **Fitbit**I love seeing how much (or how little) sleep I get throughout the baseball season. I also really enjoy doing the step challenges with some of the front office workers and my blowing them out of the water." ***/ST/***

PREEMERGENCE HERBICIDES AND BERMUDAGRASS SPORTS TURF

// By JAY MCCURDY, PHD

It seems like a topic too often revisited, but preemergence herbicides really are a linchpin of an integrated weed management strategy. Next to proper cultural practices that promote a healthy and competitive turf, preemergence herbicides are one of the most important factors influencing weeds present throughout the growing season. Annual weeds, including crabgrass, goosegrass, and annual bluegrass, can be controlled with properly timed preemergence herbicide applications in the spring and fall.

Some preemergence herbicides inhibit health of desired turfgrass, which complicates recovery from wear and tear, as well as establishment from seed, sod, or sprigs. Some are safer than others, but safety is rate and timing dependent. Our research at Mississippi State University evaluated effects of almost a dozen common preemergence herbicides on grow-in from sprigs. Over a 2-year period, Erick Begitschke, myself, and colleagues, evaluated establishment of field and greenhouse grown bermudagrass to determine how commonly used herbicides impact grow-in as well as root architecture, considered to be an important factor in resource allocation from the soil, as well as a key factor in shear strength.

In many ways, sprigging establishment isn't that much different from regrowth and recovery of sports fields. The wear and tear of routine use and maintenance damages foliage and roots; bermudagrass stolons and rhizomes are torn or crushed, and fine root hairs are dislodged from the soil that they are mining for nutrients and water.

Many herbicides, if not all, can affect grow-in and stand resilience if not applied at the appropriate rates and grass maturity. Although labeled for sports fields, many preemergence herbicides should only be applied once turf is well established to avoid having negative effects. Sports turf managers must also take into account the spectrum of weeds controlled by each herbicide. What follows is a brief discussion about pros and cons of several herbicides commonly used in sports field management as they relate to general weed control and grow-in/regrowth effects.

"Stubby" or "Bottle-brush" roots caused by mitotic-inhibiting herbicides.

Mitotic inhibitors

- Prodiamine (Barricade 4L, Prodiamine 65WG, Resolute)
- Pendimethalin (Pendulum Aqua Cap, Pendulum 3.3EC, Pre-M)
- Dithiopyr (Dimension 2EW, Dithiopyr 2L, Dithiopyr WSB)
- Pronamide (Kerb SC T&O)

MITOTIC INHIBITING HERBICIDES specifically inhibit cell division in the roots, causing a signature "stubby" or "bottle-brush" root symptomology. These herbicides have been known to initially injure bermudagrass roots and delay grow-in of sprigs. However, in many cases, bermudagrass is able to recover from these initial injury symptoms, especially when lower rates are used. It is important to read and follow all label instructions, as some of these herbicides are prohibited from being applied prior to perennial ryegrass overseeding.

The first three herbicides mentioned can provide adequate fall and spring preemergence activity on annual grasses and most broadleaf weeds. Pronamide on the other hand, doesn't provide much crabgrass or goosegrass control relative to others

EDITOR'S NOTE: The information given here is for educational purposes only. References to commercial products, trade names, or suppliers are made with the understanding that no endorsement is implied and that no discrimination against other products or suppliers is intended.

JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL

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ANSWER ON PAGE 33

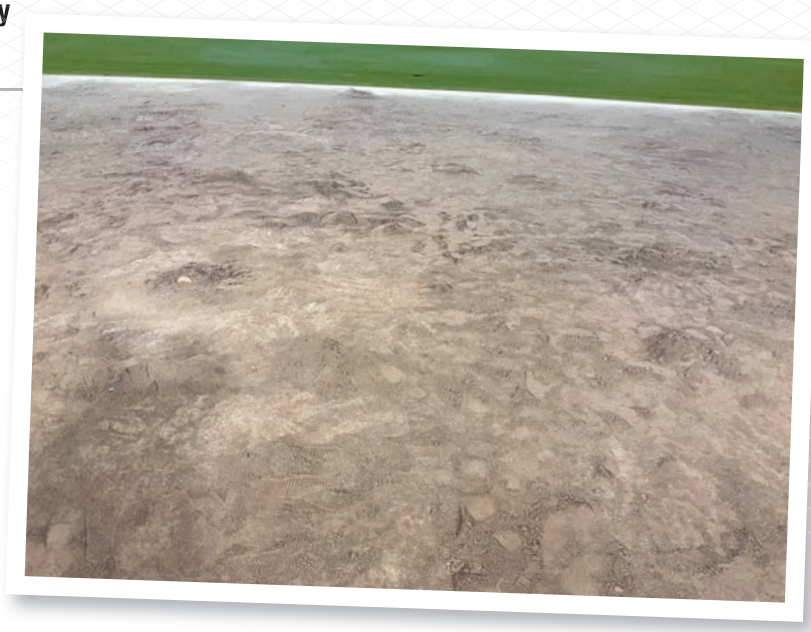
CAN YOU IDENTIFY THIS SPORTS TURF PROBLEM?

PROBLEM:
Uneven baseline with holes and small piles of clay shortly after a game

TURFGRASS AREA:
Minor league baseball stadium

LOCATION:
Birmingham, Alabama

GRASS VARIETY:
Infield clay



mentioned above. It does, however, uniquely control annual bluegrass both pre- and post-emergently. One can debate the effectiveness, but when it works it works very well. Other times it just fails due to environment or perhaps plant size.

Regardless of mitotic inhibitor, all lack the longevity for adequate season long control of goosegrass. For this reason, multiple applications (roughly twice in the spring/early-summer on an 8-week reapplication interval) are required for season-long control. On healthy turf, that amount of preemergence might not be a problem, but on thinned or compromised stands, it might cause some frustration.

Another concept to be familiar with is the combination of preemergence with postemergence herbicides. As an example, the product Echelon (prodiamine + sulfentrazone) has been marketed for its combination pre/post-emergence activity on goosegrass. Sulfentrazone has no preemergence activity to speak of, so Echelon or other sulfentrazone containing products must be applied after goosegrass has germinated in order to take advantage of the pricey sulfentrazone treatment. Even then, no product works well on goosegrass postemergence unless applied at very early growth stages, so a close monitoring of emergence is necessary to leverage the post activity.

Furthermore, other effective goosegrass post-emergence herbicides, such as Revolver (foramsulfuron) or Speedzone (2,4-D, mecoprop, dicamba, carfentrazone) may also be combined with mitotic inhibitors for pre/post activity on early-emerging goosegrass.

Some preemergence herbicides result in faster bermudagrass establishment and recovery than others. This rectangle was treated with Ronstar G, while the treated area left of it was treated with a less safe alternative.

Preemergence herbicides are almost a pre-requisite for control of annual bluegrass in warm-season athletic fields.

Preemergence herbicides are generally considered more effective for annual grassy weeds, such as crabgrass (pictured), goosegrass, and annual bluegrass

Photosystem II (PSII) inhibitors

- Atrazine (AAtrex)
- Simazine (Princep)

PSII INHIBITORS disrupt the flow of light energy within the plant. There are many reported instances of herbicide resistance to these herbicides, particularly in populations of annual bluegrass, which limits their effectiveness on sports turf. However, atrazine and simazine are especially notable for having both pre- and postemergence activity on many winter broadleaf weed species. Applications of PSII inhibitors have been known to initially injure bermudagrass, particularly during the middle of the growing season in high temperatures. These PSII inhibitors are not effective for prevention and control of crabgrass and goosegrass. However, they are commonly applied in the fall and winter with preemergence herbicides, such as mitotic inhibitors, for increased viability.

In our research, PSII inhibitors rarely reduce time to grow-in, but they do have the potential for reducing root length and total root biomass. These effects are poorly understood, but still warrant caution on weakened turf stands.

There are several advantages that may outweigh potential detriments. For one, both herbicides are cheap. So the saying goes, "it's too cheap *not to* spray." Our research, as well as that of others, indicates that simazine in combination with prodiamine as a fall preemergence is extremely effective against annual bluegrass and winter annuals. Likewise, combinations of simazine plus trifloxysulfuron, foramsulfuron, or flazasulfuron are an effective early post-emergence treatment for annual bluegrass.

Protoporphyrinogen Oxidase (PROTOX) inhibitors

- Oxadiazon (Ronstar WSP, Ronstar Flo, Ronstar G, Oxadiazon 50 WSB)
- Flumioxazin (Sureguard, Panther)

PROTOX INHIBITING HERBICIDES target a crucial step in the chlorophyll biosynthesis pathway. When applied as a liquid to non-dormant turf, both oxadiazon and flumioxazin can burn the leaf tissue. Both can be applied on a fertilizer or inert granular carrier, which minimizes the risk of injury. However, just like other herbicides discussed, both of these herbicides have the potential to reduce root growth temporarily after use. In terms of weed control, the two herbicides are somewhat different.

Of all preemergence herbicides, granular applied oxadiazon is probably the safest for bermudagrass grow-in and recovery. For this reason, it's frequently used in sod production, where unhindered bermuda growth is paramount. When applied on a granular carrier, oxadiazon provides good to excellent preemergence control of annual bluegrass, but it somewhat lacks preemergence broadleaf control. As a liquid application on dormant turf, or as a granular application during spring green up, oxadiazon provides good control of crabgrass and excellent control of goosegrass. For best results, apply at 3 lbs oxadiazon per acre rate. A common spring rotation might involve an initial liquid oxadiazon application while dormant, then a follow-up treatment with a mitotic inhibitor and some effective postemergence goosegrass/nutsedge material. Or, another spring rotation might rely upon a mitotic inhibitor for the first preemergence crabgrass application followed by a granular oxadiazon application.

Flumioxazin is rarely used on a granular carrier, but when applied as a liquid to dormant turf, it provides good postemergence control of annual bluegrass and other winter annual weeds. It has limited preemergence activity on crabgrass and goosegrass.

Very Long Chain Fatty Acid synthesis inhibitor

- *S*-metolachlor (Pennant Magnum)
- Dimethenamid-P (Tower)

SIMILARLY TO THE mitotic inhibiting herbicides, *S*-metolachlor and dimethenamid-P have been known to delay grow-in and initially injure bermudagrass roots. Both are labeled for control of annual grasses and sedges in warm-season turfgrass species. Research indicates that annual grass control is somewhat limited relative to other options discussed herein. However, tank-mixing with either simazine or atrazine is a common practice to enhance *S*-metolachlor's preemergence activity on annual bluegrass and broadleaf weed species. Both of these products provide some suppression of nutsedge. For this reason, it seems they're most often tank-mixed with late spring preemergence goosegrass applications. Dimethenamid does have some postemergence activity on goosegrass, but it's not clear whether it should be relied upon solely. Both of these herbicides can cause foliar injury and turf thinning of bermudagrass, but it is transient.

Cellulose Biosynthesis inhibitor

- Indaziflam (Specticle)

INDAZIFLAM IS particularly harmful to establishing or recovering sports fields. However, its unique mode of action and excellent weed control, even at low use rates, makes this herbicide a viable option where others may no longer work or where it is the only option available for herbicide resistant populations of annual bluegrass. Its usefulness is somewhat limited in scenarios requiring overseeding, as it has at least a one year restriction on application prior to seeding. **/ST/**

Jay McCurdy, PhD, is an Assistant Professor for Mississippi State University's Department of Plant and Soil Sciences.

MOA	Example Product	Active Ingredient	Rate estimates	Labelled Overseeding Interval
3	Barricade 4FL	prodiamine	21 to 26 fl oz/A	4 to 6 months
3	Pendulum Aquacap	pendimethalin	3.1 pt/A	3 months
3	Dimension 2EW	dithiopyr	2 pt/A	6 to 8 weeks
3	Kerb SC T&O	pronamide	2.5 pt/A	90 days
3+14	Echelon	prodiamine + sulfentrazone	24 fl oz/A	4 months
5	Aatrex 4L	atrazine	2 pt/A	6 months
5	Princep 4L	simazine	2 pt/A	6 months
14	Ronstar Flo	oxadiazon	80 fl oz/A (dormant turf only)	--
14	Ronstar 2G	oxadiazon	100 lb/A	60 days
14	Sureguard WG	flumioxazin	8 oz/A (dormant turf only)	--
15	Tower	dimethanamid	2 pt/A	6 weeks
15	Pennant Magnum	metolachlor	2.5 pt/A	4 months
29	Specticle Flo	indaziflam	6 fl oz/A (established >16 mo)	12 months

Table X. Common preemergence herbicides for use in bermudagrass athletic fields. Mode of action (MOA) is provided as a decision support tool in order to minimize risk for herbicide resistance.

DESIGNING A SYNTHETIC FIELD IN FLOOD-PRONE AREAS

Lessons learned from Hurricane Florence

Synthetic turf fields flooded by Hurricane Florence on the campus of the University of North Carolina.

In the fall of 2017, the University of North Carolina at Chapel Hill built two synthetic turf fields at the Finley Athletic Complex. With the understanding that the fields were located within Chapel Creek's floodplain, the athletic design firm hired by the school, FitFields, chose Envirofill infill, along with a Brock International pad and FieldTurf hybrid dual fiber with thatch for additional infill stabilization.

One year later, that system design was put to the test when last September Hurricane Florence hit the Carolinas and dropped more than 37 inches of rain to become the wettest cyclone ever recorded in the region. More than 3 feet of water covered the practically new fields. The real-life experiences of that extreme flood event and the restoration afterward offer great guidance when considering a synthetic field situated in similar environmental conditions.

Planning for the potential future

DAN DODD, founder and president of South Carolina-based FitFields, explains the design and decision process that went into UNC's fields:

"The turf face weight was slightly higher than what we would recommend for traditional systems, but the added fiber weight was an additional factor that helped us develop an overall mitigation plan for a potential flood event. We felt our weighted system did not need a customized header attachment to the composite wood nailer board. A traditional connection was made since we had so much weight per square foot

EDITOR'S NOTE: This article was sent to *SportsTurf* by USGreentech, provider of non-rubber infills for the synthetic turf industry.

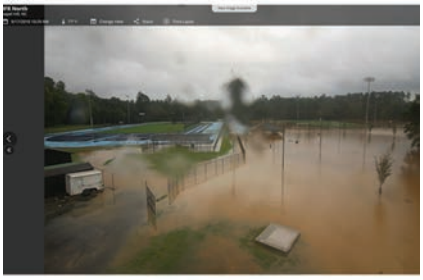
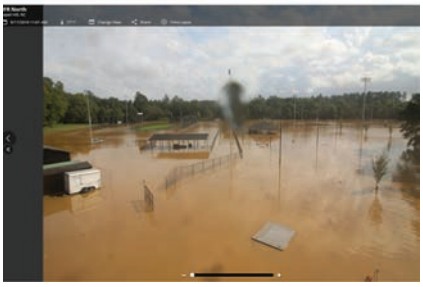
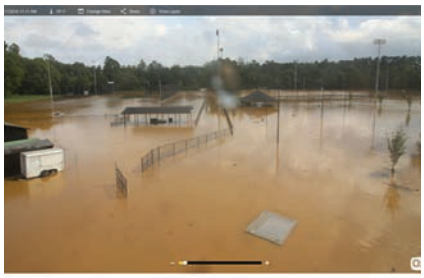
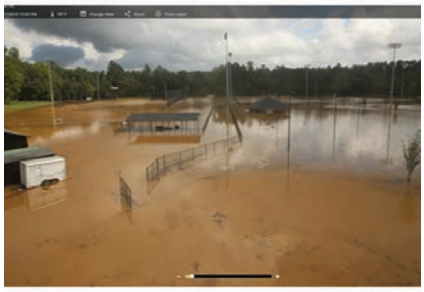
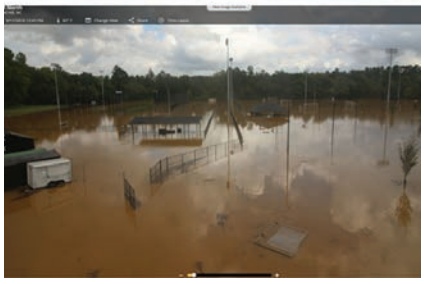
Twenty-four hours after the flooding began the soccer teams were back practicing on the fields.

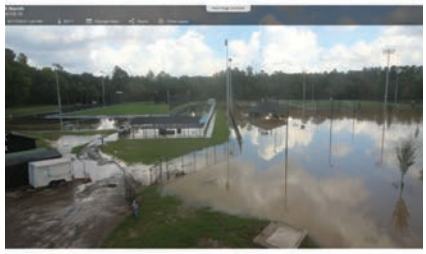
on the field. We felt that the "bubble" effect would have less of a chance occur based on the weighted design."

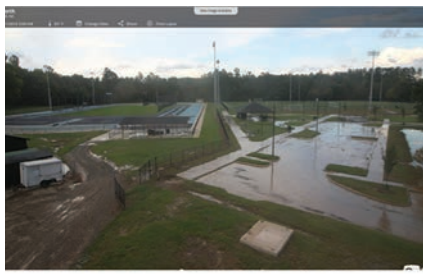
Selecting the right infill is one of the most important decisions when planning for a potential flood event. Many infills have a specific gravity less than 1.0, which means they will float. After deciding on the type of infill, the second important decision is ensuring that the amount in the system can overcome the buoyancy of the pad. You want to make sure that the system is negatively buoyant, meaning that the pad stays put and doesn't even start to float. The buoyancy of the common pads on the market range from 4.5 pounds to more than 7.5 pounds per square foot. For the UNC project, 8 pounds of Envirofill was used. Composed of Texas quartz sand coated in acrylic and permanently infused with Microban antibacterial, Envirofill has a high specific gravity (2.65) that helps it and stay within the synthetic turf. Microban technology that protects the infill against the bacteria, mold and mildew that would be present after the flood recedes.

Dan Dodd continues: "The third issue that was studied in detail, was to ensure

FLOOD TIMELINE: 9/17/2018, 8:15am – 9/18/2019, 9:22am






that we had an infill system that would not migrate across the field plane while keeping the 0.5% field drainage slope. The field slope was vital for hydraulic performance and we did not want to take the risk with a slow draining, flat field drainage system. Overall, it was critical not to have any infill wash into the adjacent stream corridor.

"We also placed drain basin cleanouts at the high point between both fields as a potential air pressure release. The concept was simple, as the flood waters would recede from the high point between the fields, the contained air pressure in the submerged pipe system would have the ability to vent from the cleanouts at the same rate as the receding flood."

In October 2012, Hurricane Sandy hit the Eastern seaboard and inundated New York City with several feet of water. Many artificial turf fields in NYC were flooded, including several at Kingsborough Community College in Queens that were installed with Envirofill, a decision that was made because of the fields' location only 600 feet from the ocean. The infill, turf and pad stayed in place and were back in play shortly after the waters receded. Other fields nearby saw their infill carried away and the pads and turf floated, wrinkled and displaced, rendering them unplayable.

Aftermath of Hurricane Florence

SO HOW DID UNC'S FIELDS fare through Hurricane Florence? Just 24 hours after the floodwater receded the lacrosse and soccer teams were back practicing on the fields.

Much credit goes to Casey Carrick, CSFM, Director of Athletic Grounds & Turf Management at UNC, and his team who executed a recovery and restoration plan that should become standard operating procedure for similar situations.

As Casey explained, "Our team got right to work as the nearby natural turf fields had been covered in nearly 8 feet of water and were in rough shape. They would be out of commission for awhile. While we were waiting for the sun to dry out the synthetic surface, we removed all the debris from the field. We then used a drag behind brush to break up the dried silt from the blades. On the next two

passes we used a GKB vacuum (STEC Equipment), which pulled silt from the infill up to the surface where it could be removed. We then finished it with a Buffalo blower. The infill stayed in the turf and there was none noticed outside the field. We were very impressed with how well these fields performed and how quickly the team was able to get back onto the fields."

No two flood events are the same. Some floods can be very fast moving and last for days or weeks scouring the earth in its wake. Some can be slow moving backwater and recede rather quickly leaving behind a lot of silt. And some can be due to tidal surge. Because no two events are exactly the same, its takes a skilled field designer to anticipate the conditions and design the field appropriately to give it the best chance of surviving the flood. ***/ST/***

begin a revitalization of a rain garden. We also installed an interpretative sign showcasing best management practices for an environmentally sustainable sports facility that easily allows visitors to gain knowledge of our ecological maintenance practices," says Brusius.

A $100 fee has been required prior to receiving the recognition materials but that pricing structure will change January 1, 2019. A $50 fee will be assessed when the facility assessment is submitted. If the facility successfully achieves the certification, a $100 fee for the recognition materials will then be assessed.

The recertification process will be more streamlined with the attesting step eliminated for those facilities that do not have changes since their initial assessment.

Double time

FOUR STMA MEMBERS have been awarded certification for a second facility. Josh DeJong was the Sports Turf Manager for Platte Valley (CO) School District, which was certified in April 2017. He used the program there as a model for other departments. "I used this experience to 'raise the bar' with regards to our organizational culture, striving to exhibit strong professional standards and practices and being an example for other departments and area agencies to model themselves after," says DeJong. He moved to the Eaton Area Park and Recreation District in 2018 where he implemented the certification program there. "The knowledge gained, and implementation of best practices and policies directly impacts the quality and safety of or EAPRD facilities and demonstrates to participants and guests the importance of turf management and environmental awareness," says DeJong.

The STMA Environmental Committee is working on Version 3.0, which will include additional areas not currently assessed, such as landscaping, native plants and parking lots. It should be ready for adoption in mid-2019.

The Committee is chaired by Vickie Wallace and includes members: Rich Calarco, CSFM, Kyley Dickson, PhD, Blair Elliot, David Gerken, Zach Holm, CSFM, Jeremy Husen, Kevin Mercer, CSFM, Jimmy Simpson, CSFM, Gil Perez, Barry Stewart, PhD, and Doug Vescio.

For more information about STMA's Environmental Facility Certification Program, go to *STMA.org*. **/ST/**

FACILITIES CERTIFIED ENVIRONMENTALLY RESPONSIBLE

Allen Pond Park, Edward Hall, City of Bowie, Bowie, MD
Berliner Sports Park, Ryan DeMay, Columbus Recreation and Parks Department, Columbus, OH
Celebration Park, Kim Spearman and Team, City of Allen, Allen, TX
Champion Field, Dean Pearson, Seattle University, Seattle, WA
Chesterfield Valley Athletic Complex, Brian Winka, CSFM, Chesterfield, MO
CHS Field at the St. Paul Saints Baseball Club, Nick Baker, St. Paul, MN
Ciudad Real Madrid, Paul Burgess, Madrid, Spain
Eastside Centre, Joel Rieker, East Peoria, IL
Elon University Sports Complex, Scott Stevens, CSFM, Elon, NC
Greens Farms Academy, Tom Barry, Westport, CT
Grinnell College Athletic Fields, Jason Koester, Grinnell, IA
Iowa City Soccer Complex, Colin Stuhr and Joe Wagner, City of Iowa City, IA
Jim Warren Park, John Wagnon, Franklin, TN
Longfellow Park, Travis Stephen, Park District of Oak Park, IL
Minute Maid Park, Israel Hinojosa, Houston, TX
Open Space Park, Lee Van Meeteren, Sioux Center, IA
Peoria Sports Complex, Al Siebert & Brandon Putman, Peoria, AZ
Pioneer Community Park, Chris Bolender, Peoria, AZ
Platte Valley Schools, Joshua DeJong, Kersey, CO
Pleasant View Sports Complex, John Cogdill, Boulder, CO
Prairie Ridge Sports Complex, Elliott Josephson, Ankeny, IA
Real Madrid Santiago Bernabeu Stadium, Paul Burgess, Madrid, Spain
Red Bull Arena, Zach Holm & Team, Harrison, NJ
Red Bull Training Facility, Zach Holm and Team, Harrison, NJ
Rio Vista Community Park, Chris Bolender, CSFM, Peoria, AZ
Ruby Hill Park, Abby McNeal, CSFM, Denver, CO
Target Field, Larry DiVito, Minneapolis, MN
The Gulfport SportsPlex, Ken Edwards, CSFM, Gulfport, MS
University of Michigan Soccer Complex, Anthony Pell, CSFM, Ann Arbor, MI
University of Nebraska Hibner Soccer and Tennis Center, Jared Hertzel and Blake Nelson, Lincoln, NE
University of North Carolina Greensboro Sports Turf Groundscare Center, Peter Ashe, CSFM, Greensboro, NC
USC Upstate Soccer Complex, Bruce Suddeth, Spartanburg, SC
Vanderbilt Athletic Complex, Ryan Storey, CSFM, Nashville, TN
Waukegan SportsPark, Noel Brusius, CSFM, Waukegan, IL

JAMES BERGDOLL, CSFM

This month in "The *SportsTurf* Interview," we meet James Bergdoll, CSFM, the Director of Park Maintenance for the City of Chattanooga (TN) Department of Public Works, a position he has held since 2015. James is on the STMA Board of Directors representing the Parks and Recreation segment. He holds a MS in Sports and Recreation Administration from Western Kentucky University and a BS in Turfgrass Science from Purdue University. Prior to serving the citizens of Chattanooga, Bergdoll oversaw the design, construction, and operations of Elizabethtown (KY) Sports Park. He also gained industry experience at the International Polo Club Palm Beach, Baltimore Orioles Spring Training, Indianapolis Indians, Purdue Athletics (Golf & Sports Fields), and Hanover College. Bergdoll has been a member of the STMA since 2004, serving on several different committees, and achieved CSFM status in 2013.

James Bergdoll, CSFM

SportsTurf: What are your current responsibilities?

BERGDOLL: I am the Director of Park Maintenance for the City of Chattanooga Department of Public Works. My division operates and maintains the City's parks, green spaces, greenways, trails, and golf courses. Our systems includes more than 800 maintained acres; 106 parks and green spaces; 35 miles of greenways and trails; 53 tennis courts; 43 playgrounds; 20 swing sets; eight outdoor fitness zones; five youth athletic association facilities (25 diamonds and five soccer/football fields); two golf courses; and two bridges. My role is the administrator for the division where I develop and oversee the nearly $7 million operating budget, 65 employees, capital projects, service and repair contracts, maintenance plans, SOP's, special event coordination, volunteer activities, etc.

ST: What does a regular working week entail?

BERGDOLL: It varies day to day, but typically checking in with staff to follow up on issues, service requests, work orders, projects, etc. Attending various meetings with internal and external partners for collaboration, planning, projects, events and more.

"WE, AS AN INDUSTRY, HAVE TO START REACHING OUT TO POTENTIAL EMPLOYEES AT A YOUNGER AGE; THIS IS NOT JUST A SPORTS TURF INDUSTRY ISSUE. AS WITH MANY OF MY PEERS WHO HAVE BEEN IN THE INDUSTRY FOR 15-20 YEARS NOW, WE HAVE TO START LOOKING FOR OUR REPLACEMENTS."

Visiting park sites to review work, projects, issues, and meet with staff.

ST: How did you first become involved in sports turf management?

BERGDOLL: Many years ago I began my college education at Purdue University in another field and after a few years I decided it was no longer an interest of mine so I dropped out and moved back home. There I responded to an ad in the local newspaper for a position at a local small college to work at the physical plant doing campus deliveries, move furniture, and fill in with the grounds crew when needed. Shortly thereafter I moved to the grounds staff full-time and was assigned to the college athletic facilities. One other employee and I maintained more than 50 acres of DIII athletic fields and general grounds areas surrounding them. It was there the grounds supervisor encouraged me to return to Purdue and study turfgrass science since he saw that I had developed an interest and passion for the work. So after a few years I took his advice; I quit my full-time job and returned to school to pursue that degree in turfgrass science. It was there where I learned a number of things I wished I would have known while worked at that little college back home!

ST: How did you first become involved with STMA?

BERGDOLL: When I returned to Purdue I knew that I wanted to

work in the sports turf industry so it seemed like a good idea to me to join the STMA as a student, hoping to network and meet others in the industry. Also, I was fortunate enough to participate in the very first Student Challenge the STMA hosted at my first national conference.

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

BERGDOLL: I feel like my career has benefited greatly by being a member of the STMA. It has offered me a place to connect with peers to discuss job-related items, learn best management practices, stay in tune with new ideas and products, connect with possible future employers and employees, and promote myself and professionalism within my chosen career field. Just to name a few.

ST: What specific challenges do turf managers at the Parks and Rec level face that differ from your peers in other STMA membership categories?

BERGDOLL: Generally speaking I would say that turf managers at the Parks and Rec level have fewer resources and more users. At the municipal level, park maintenance budgets are typically not the highest ranking on the priority scale. As Parks and Rec administrators we have to fight hard for every dollar and employee we are allocated each year. Therefore you have to get creative sometimes to accomplish tasks, whether it's borrowing equipment, hiring contractors, or using volunteers. From a use standpoint, it can be very challenging managing field use at the parks and rec level. Being able to schedule in maintenance is key along with working with user groups to educate them on how they can help alleviate additional wear and tear to the fields. This is where communication is very important.

ST: What are the STMA Board's priorities now?

BERGDOLL: The priorities of the STMA Board are making sure we achieve our mission, which is to advance professionalism in sports field management and safety through education, awareness programs, and industry development. The Board also strives to work toward our vision, which is to be the recognized leader in strengthening the sports turf industry and enhancing members' competence and acknowledgement of their professionalism.

From a recent camping trip to Cloudland Canyon State Park, Trenton, GA.

ST: How do you think the profession and industry will change in the next 10 years?

BERGDOLL: Obviously technology is rapidly changing and the industry is adapting to stay on the forefront of these new and developing technologies from new varieties of natural turfgrasses, equipment, chemicals and more. However, I think the biggest change in the next 10 years will be the workforce. We, as an industry, have to start reaching out to potential employees at a younger age and it really is not a sports turf industry issue. It is going to be a challenge for all industries that rely on manual labor, skilled and semi-skilled trades, and applied sciences. As with many of my peers who have been in the industry for 15-20 years now, we have to start looking for our replacements.

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

BERGDOLL: Spending time with my wife, two young daughters, and three greyhounds is my biggest interest outside of work. We recently bought a little popup camper now that our girls are big enough to enjoy camping and spending time outdoors with mom and dad. We live in a beautiful part of the country where there are great camping and hiking spots all around within just a short drive. I look forward to taking advantage of that more now. I also enjoy riding my motorcycle, gardening, cooking, and listening to my vinyl record collection. **/ST/**

Space was tight during construction of the new $500 million D.C. United Audi Stadium.

Two systems control drainage at new DC pitch

Two underground systems add to the high quality of the new Audi Field here at Buzzard Point, the new home for DC United of Major League Soccer. Opened in July 2018, the stadium, which cost approximately $500 million, will also host other sporting and cultural events, community activities, and concerts. The state-of-the-art urban facility has a capacity of 20,000 with 31 luxury suites, a bike valet, and 500,000 total square feet of mixed-use retail and residential space on the 110-acre site. This includes the storm water drainage storage system and an underground system to help dry and cool the natural grass. Project leaders are striving to reach a Leadership in Energy and Environmental Design (LEED) Gold certification.

Under the pitch is a network of perforated high-density polyethylene (HDPE) pipe that provides additional drainage into the underground storm water detention system and can be used to air-dry and even cool the natural Northbridge

The storm water storage system used these chambers from ADS to handle the capacity spec of 50,000 gallons.

EDITOR'S NOTE: Advanced Drainage Systems (ADS), founded in 1966, manufactures thermoplastic corrugated pipe and other water management and drainage products. They sent this article on their work at the new Audi Field in Washington, DC.

bermudagrass. Precision Turf, Sugar Hill, GA, handled the installation.

"This is very similar to a lot of the drainage systems we put in on high profile fields," said Kyle Simonian, general superintendent of Precision Turf. "The only thing different is the oversight nature of both the lateral lines and the trunk lines that are under the field. We ran two, 24-inch HDPE trunk lines, and coming off of each are 6-inch perforated HDPE pipelines. That perforated pipe does two things. First, it can do just simple gravity drainage and in the future it can be hooked up to a blower/vacuum unit at the downstream side of the pipe and actually either blow warm or cool air depending on the season, or put the whole system under negative pressure and actually increase the drainage flow rate of the system. A lot of times what stadiums do is use these systems for the negative pressure to increase drainage flow. But sometimes they will use the cool blowing to cool down the profile during the summer heat. This increases the oxygen content of the soil and helps the plant."

The Precision Turf crew of six installed more than 1,000 feet of the 24-inch diameter and 8,860 feet of the 6-inch diameter perforated corrugated HDPE pipe in about 15 working days.

"This is probably double what we would usually use for a field this size," he said. "The drainage lines on this are 10 foot on center; normally on a high profile field you might see 15's but more likely you'll see 20 on center on the laterals. To get the proper airflow through the field system when you have these systems, you need the spacing between each lateral tighter otherwise the air movement would get completely through the pitch. If you were to put 20 foot centers there would probably be areas in between those drain lines that would not be getting the proper heat or the cool from the blower unit.

"The design depends on how they want to run the collector, the big pipe like the 24 inch we used. Sometimes it's one short run down the middle or at the end of field. There is also another type of design that makes a two-pronged fork so you have one pipe running down the field and two spurs that split the field into thirds," Simonian said.

A stone bed was put under and around the eight chambers, which were also wrapped in geotextile.

The laterals are buried between 24 to 30 inches below the engineered soil and gravel surface. The subgrade is flat rather than pitched with a crown down the middle. The crew used an excavator with a rotating laser to get the ditches pitched for the gravity flow.

"The water flows into a chamber that is a basically a settling tank and when the outflow is above the bottom of the box that water goes underneath the field below into the StormTech system to capture the water and allow it to slowly infiltrate into the ground," Simonian said.

The DC Department of Energy and Environment (DOEE), which overseas storm water management, restricts the amount and rate of storm water runoff that it allows to enter into the public storm network. This led to investigating the various types of ways to detain the storm water, and 242 StormTech MC-3500 chambers from ADS were used to construct eight systems at the site to provide a total installed volume of 51,142 gallons. The chambers are made from an engineered grade of impact-modified polypropylene copolymer.

"The preliminary design to control storm water runoff called for four large 'box of rocks' infiltration areas under the field," said Branch Echols, project manager for Joseph J. Magnolia Construction, Inc., Washington, DC. "They were 9 feet deep to the bottom and each one would have required quite a bit of layback excavation to meet OSHA requirements, not to mention quite a bit of stone backfill. So, underground storm water retention was necessary because space was not available for construction of typical BMP retention ponds."

The goal was to detain and store storm water runoff in order to control flows at the same level before the new construction. But due to the tight area of the site, there were restrictions on the amount and size of materials that could be used, and the schedule was tight as well. Calculations showed that a system capable of handling more than 50,000 gallons of water would be required. As this was a design/build project, Magnolia was able to propose an alternative that greatly reduced the amount of excavation required as well as the amount of stone backfill.

The completed field with five storm water storage units and a network of pipes for drainage and sub-irrigation.

Branch Echols, project manager for Joseph J. Magnolia Construction, Inc.

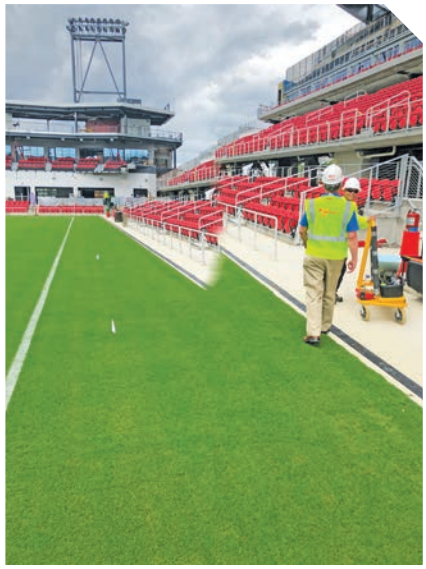
Additional access restrictions access were created due to the aggressive schedule and specific construction milestones along with facilitating deliveries and staging of the stadium's structural steel. In order to work around these obstacles and comply with the required storage capacity requirements, Magnolia proposed to use StormTech chambers instead of large, stone-filled infiltration areas.

Each chamber, without end caps, measures 90 inches long x 77 inches wide x 45 inches high and has an installed volume of 178.7 cubic feet of

water. Ferguson Waterworks, Newport News, VA supplied the chambers from its Upper Marlboro, MD branch, and coordinated the just-in-time deliveries to the downtown site.

There are five chamber units under the field and three others under bio-retention fields outside of the stadium, which are dedicated to store runoff from the roof, sidewalks and parking lots.

"There was no place for a laydown area to construct storage units or stockpile stone," Echols said. "Every square foot of the site was being occupied by either men, equipment, or both. With the product we could meet DOEE's storm water retention requirements as well as reduce the required laydown area to only a couple of pallets. Work inside the stadium had to be coordinated around the structural steel subcontractor due to their mobile cranes and large staging areas needed for the structural beams. Because of this, we were restricted to windows of time to complete the installation, so it was imperative to have all of our material on-site and ready.



The Magnolia Construction team does its last onsite inspection before the first game.

"Due to the staging of large steel beams adjacent to the excavation, we only had access from three of four sides," Echols said. "To overcome this when placing stone between and around the chambers, our general superintendent, Scott Windon, came up with the idea to use a crane and large concrete bucket/hopper. We staged a mini-excavator next to our stone stockpile and alternated filling two concrete hoppers, enabling the crane to keep moving with no downtime for loading. Normally, we would have used a large excavator to place the #57 stone, which also would have taken longer. The crane cost a little more, but we were able to save time and beat our estimate, which ultimately resulted in a cost savings."

Along the sides and on top of the chambers, ADS 0601TG non-woven geotextile was used as a soil separation layer. Underneath the chambers, ADS 315WTM woven geotextile was used to add scour protection. ***/ST/***

9 YEARS LATER: CHECKING IN WITH TURF FEEDING SYSTEMS

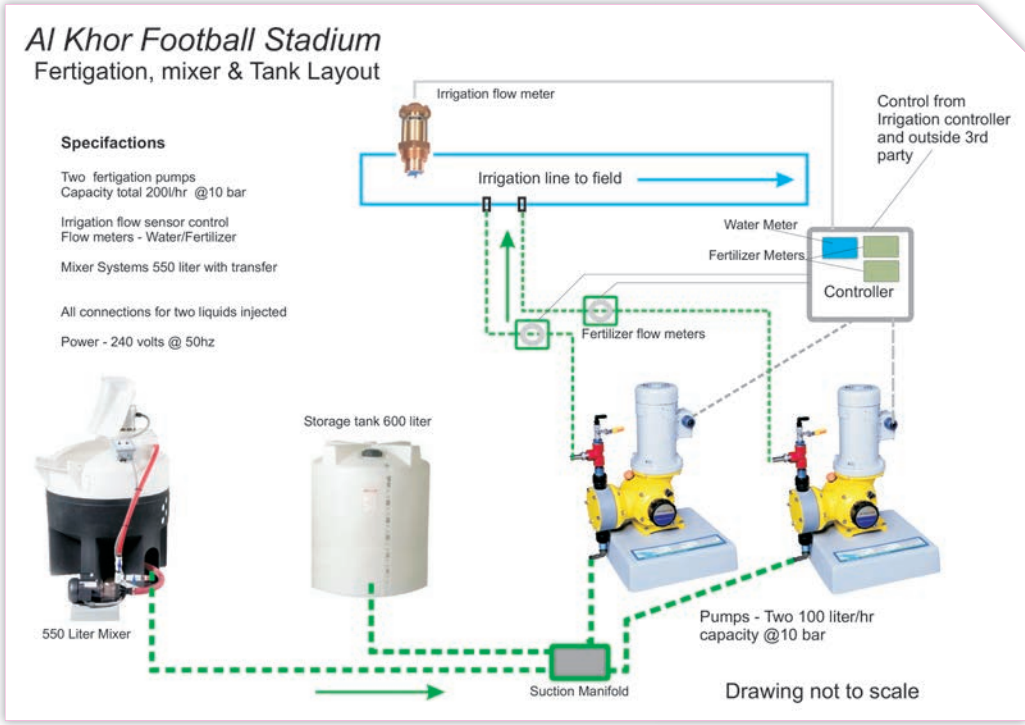
In 2009 we ran an article about a sports complex manager in Olathe, KS adding a fertigation system to his irrigation resource. Shawn Brumbaugh said it worked so well, he made the same purchase decision a second time, using the savings from his first fertigation system to invest in another. "We saved close to $5,000 the first year we installed our fertigation system and that includes the cost of the system itself."

Nine years later Michael Chaplinsky, president of Turf Feeding Systems, Katy, TX is still enjoying helping struggling fields improve while his business resume now includes installations for the San Francisco Giants, Minnesota Twins and numerous minor league stadiums across the US. He's currently working on a project overseas involving a future World Cup facility.

"Fertigation is a great tool for maintaining multiple fields of a sports complex. All fields can be lightly fertigated for lower cost maintenance, and the rate can be increased before heavy use to prevent damage from overplay," says Chaplinsky. "You also can help certain areas, like goalmouths, by spotting that zone with higher water and fertilizer applications.

Fertigation can lightly apply maintenance fertilizer, soil conditioners to promote root growth and Probiotic biology to reduce soil compaction

"Fertigation can be turned up at an increased rate to push the grass growth before the season and carry the growth through the season," he says. "Fertigation can help reduce water, fertilizer and chemical use by 50%, while maintaining reasonable quality."



Helping small town football

THE HIGH SCHOOL football field in Joaquin, TX is the East Texas town's Holy Grail of turfgrass. But the town's 824 residents discovered there were serious turfgrass problems caused poor well water quality.

Joaquin High School has a great stadium and has had the field totally rebuilt, but they have not been successful at growing grass on the field. The well water used for irrigation has high sodium and bicarbonates, and the poor water quality builds in the soil to a toxic level each year. The turfgrass is stressed and bare by football season, and the more they fertilize and irrigate, the worse the field looks.

Sodium is an invisible poison in many water wells in western states. Even low levels, 300 ppm to 500 ppm, can build up in the soil to toxic levels by irrigation. Sodium is locked into the soil by cation linkage and builds up month after month by irrigation. Even seasonal rain will not flush the sodium from the soil.

Turf Feeding Systems led a special project with the high school to treat the sodium and bicarbonate that had built up on the soil.

Chaplinsky said, "We installed a L500C fertigation system on their football field irrigation system for Mark Bonner, the field manager. Mark also started applying a special blend of plant and soil nutrients as well as our sodium blocker. Our nutrient program will release the sodium as well as start rebuilding the soil by building the soil health. This will build the soil engine to open the soil, start decomposition of organics in the soil to increase root growth and plant health.

"Additionally, we are including growth products; low salt fertilizer with sulfur to work on the bicarbonates. Soil health is the secret and once the soil engine is working properly, sodium and bicarbonates will become manageable and not issues," he said. "I will help Mark create one of the best high school football fields in Texas. **/ST/**

JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL

ANSWERS FROM PAGE 17

The reason why this baseline is uneven and has holes and small piles of clay on it immediately after a game is quite an unbelievable story. This stadium field is home to the Birmingham Barons, the AA Affiliate of the White Sox. Once a year, a major jewelry store franchise holds a "Diamond Dig" on this ballfield, where they bury a diamond at a 1/4-inch depth the night before the event somewhere along the baseline and invite 150-200 women to participate in the "Dig" by equipping them with a plastic ice cream-like scoop to use as for shovels. The first year this was performed it was done in the home plate area; however it caused too many problems since the ladies made very large divots in the clay. After that initial event, they decided it would be best if it was moved to the infield area. The spectacle usually takes about 15-30 minutes to complete, depending on how fast they find the hidden gem. After about 5 minutes, the grounds guys give a clue to narrow down the location and prevent needless excavations. Repair of the area takes a couple of hours. They first use a heavy nail drag with 200 lbs. of weight and drag in two directions (long ways and circles). Then, they flip over the nail drag on its flat top to float out the material to a somewhat smooth surface. Next, they roll with a 2.5-ton vibratory roller, flood with water, which is followed by a light nail and screen drag, rolled and then the infield is flooded again. Finally, they add conditioner and do a final drag and water. The grounds manager says, "It never really turns out perfect but is playable."

Photo originally submitted by Daniel Ruggiero, owner of Gameday Athletic Surfaces. The story and current photos were submitted by Zach Van Voorhees, head groundskeeper for the Birmingham Barons, and 2018 Southern League Groundskeeper of the Year

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.

Irrigation's impact on heat island mitigation and energy consumption

Kentucky bluegrass surrounds this test wall.

Strategies to conserve water have been implemented by many municipalities in the Southwest United States to minimize water used for irrigating urban landscapes. These strategies include eliminating turf areas and replacing them with xeric plants and/or hardscapes. However, such an approach can in return create or contribute to already existing urban heat islands. Heat islands are defined as urban, built-up areas that can be up to 12 degrees Celsius (53.6 degrees Fahrenheit) warmer than adjacent rural areas. The documented negative consequences resulting from heat islands include increased peak energy demands in summer months, higher air conditioning costs, greater air pollution and increased greenhouse gas emissions, an increase in heat-related illnesses and mortality, and decreased water quality. Despite these documented heat-island effects, no research has been conducted to determine the consequences of these strategies with regard to overall water and

EDITOR'S NOTE: The Lawn Institute (TLI), the Foundation of Turfgrass Producers International (TPI), has a long-standing history of funding natural turfgrass research at nationally and globally recognized universities. Below is a summary by Casey Reynolds, PhD, executive director of TPI, on research assisted with TPI funding by Dr. Bernd Leinauer and Dr. Matteo Serena at New Mexico State University. It first appeared in the September/October 2018 issue of *Turf News*.

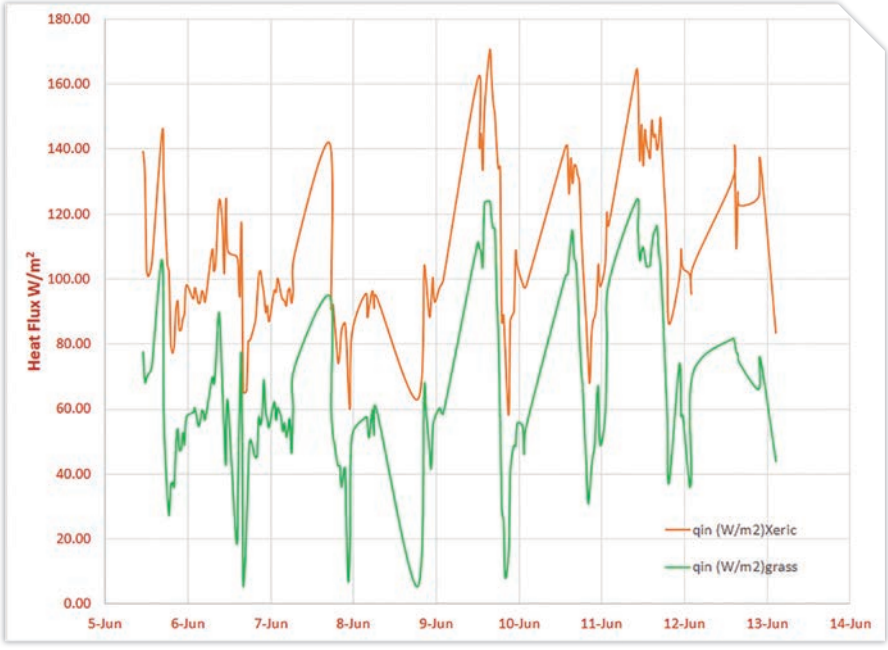
energy consumption. Research is needed to quantify the effect and importance of different types of landscapes on urban ambient temperatures around buildings and the subsequent energy consumption inside those buildings.

A study is underway at New Mexico State University to investigate the effects of different landscapes (irrigated turfgrass, non-irrigated xeric, hardscape) on ambient air and surface temperatures. In a second phase, data will be used to model energy requirements to cool or heat adjacent buildings. Two standard wood frame walls covered with stucco measuring 3.5 m by 3.5 m (11.48 ft. by 11.48 ft.) and surrounded by either Kentucky bluegrass or hardscape (coarse, crushed rock) were set up at New Mexico State University's turfgrass research center and on campus. Four thermocouples were mounted on each wall, two at 0.50 m (1.64 ft.) and two at 1.00 m (3.28 ft.) height from the ground. To measure air temperature, sensors were also installed at the same height in front on each wall at a distance of 10 m (32.81 ft.). Additional sensors measuring relative humidity, wind speed, and net radiation were placed on top of each of the walls. Sensor readings were collected and recorded every 30 minutes using dataloggers.

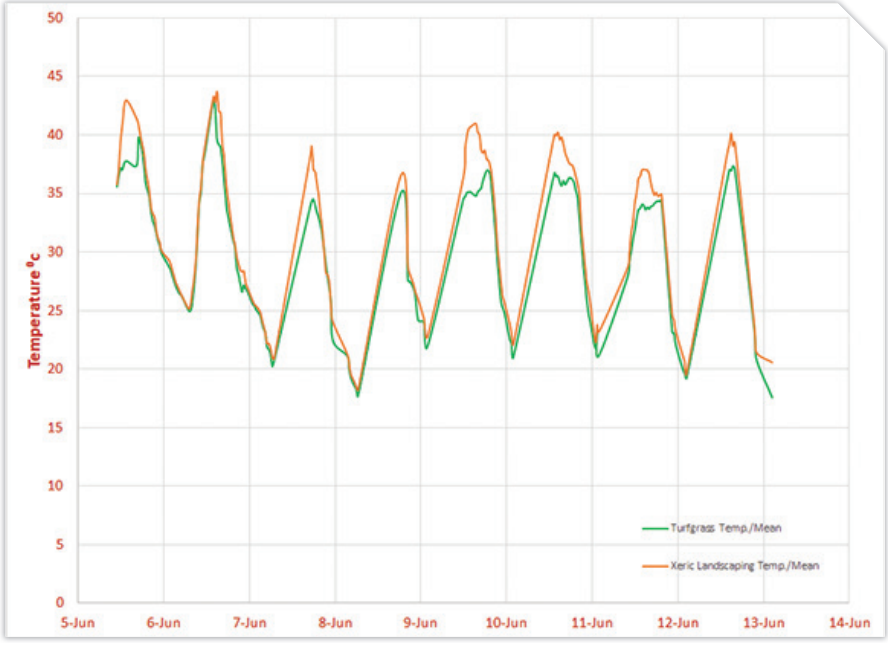
Data are used to calculate heat flux (q) on the outside of the walls, which is a contributing factor to temperature changes inside buildings. Heat flux or thermal flux, also referred to as heat flux density or heat flow rate intensity, is a flow of energy per unit of area per unit of time. Moreover, relative differences between the heat fluxes on turfgrass and on hardscape also can be calculated.

A small sample of results is presented here during one week in June 2017 with high solar radiation (7.22 kWh/m2/day, week of June 5, 2017). Generally, the temperatures on the outside of the walls surrounded by two different landscapes do not differ considerably (Figure 1) even though building wall temperatures are cooler when surrounded by natural turfgrass than xeric landscapes. However, differences are more pronounced for heat flux. In June for example, heat flux along the wall surrounded by xeric landscaping exceeds those at the wall surrounded by natural turfgrass by up to 80 percent (Figure 2). In November, during a time period with low solar radiation (5.69 kWh/m2/day, week of November 7) these differences are still present but are much smaller.

This research will continue through 2019 with more results forthcoming. You can also keep an eye on the Twitter accounts of Dr. Bernd Leinauer (@NuMex_Turf) and Dr. Matteo Serena (@matteoserena1) for updates and images. **/ST/**



Temperature changes during one week in June on wall surrounded by turfgrass and by hardscape.



Heat flux changes during one week in June on wall surrounded by turfgrass and by hardscape.

All photos and graphics for this article have been supplied by the research team of the research project in which they appear. Thanks to TPI staff for their assistance.

Reaching schools with pest IPM programs

Pest management in schools has received increased attention in New York State (NYS) and nationwide. This is due to the critical need to decrease pesticide use to protect our children, who, by nature of their size and developmental stage, are at greater risk than adults. Yet, at the same time, we cannot compromise the quality of pest control because pests represent an equally important health hazard. Schools are especially challenging to manage because they include such varied settings as classrooms, cafeterias, laboratories, auditoriums, theaters, playing fields, playgrounds, and gardens. These areas are heavily used for a variety of purposes, including after-hours public meetings. Visitors, staff, and students are frequently in direct contact with the lawns, athletic fields, flowers, trees, playgrounds, and buildings on the school grounds. The NYS pesticide notification law and "Safe Playing Fields" act have resulted in additional pressure on schools to reduce pesticide use. There is a concerted nationwide effort to have verifiable IPM in all of the country's schools.

NYS schools need assistance in reducing risks to children and others from both pests and the overuse of pesticides. In 2017, NYS IPM Program activities have resulted in school personnel becoming better informed and able to implement IPM in their school districts.

Managing geese on school grounds was the focus of a demonstration project and associated outreach. A school IPM assessment tool was developed and began to be piloted. A phone survey of Boards of Cooperative Educational Services (BOCES) health and safety officers is providing input into school IPM outreach and implementation. The NYS IPM Program made several blogs and tweets throughout the year with IPM stories of relevance to the state's schools and childcare facilities. NYS IPM Program staff made visits to several schools trouble shooting specific pest-related situations, collaborated with Cornell faculty on research of relevance to school IPM.

In 2014, NYS IPM staff initiated its blog and Twitter account with IPM stories of relevance to the state's schools and childcare facilities (http://blogs.cornell.edu/schoolchildcareipm/). Through Twitter we expanded contact with statewide and nationwide school, childcare, and health professionals. During 2017, blog entries included school crafts and sanitation, school nurses and IPM, raccoons, mice, wild parsnip, sports field management, geese, NYS Department of Health's Green, Clean, and Healthy Schools project, and US EPA's school IPM webinar series.

In 2014, NYS IPM staff began surveying, by phone, BOCES health and safety officers on their perceptions of the pest management related needs of the state's schools. The survey consists of 9 questions developed in consultation with our Community IPM team. The results will be used to provide input into our future school IPM outreach. **Highlights to date include that schools need assistance in turf and grounds management**. Most have concerns about the "Child Safe Playing Field Act" but not the Neighbor Notification Law. The development of cooperative bids for pest management or landscape services is a good idea, as is hosting webinars.

Site visits

NYS IPM PROGRAM STAFF made several visits in 2017 to schools trouble shooting specific pest-related situations. These included visits concerning mice and fleas at two different schools, one to make recommendations on a goose problem, and another to scout for and make recommendations on ticks.

On the request of Fred Koelbel, a longtime collaborator, NYS IPM staff performed two tick inspections at school properties. Parents are worried that kids are picking up ticks on the school grounds and athletic fields. We determined, through dragging, that mainly the athletic fields are free of ticks, but the wood-lined edges are a higher risk area. This school also has walking trails and wooded areas where ticks were found.

Other outreach

NYS IPM STAFF MEMBERS collaborated with Jenny Kao-Kniffen, Cornell University's Horticulture Department, with her USDA-NIFA-CPPM funded project, "Overseeding to Enhance IPM for School, Community, and Athletic Fields." Working on 50 school and community playing fields in New York, Maine, and Connecticut, the purpose of the project is to implement and evaluate the efficacy of repetitive overseeding on school and community playing fields as a safe, cost-effective means of weed control and reducing field compaction without the use of pesticides.

Repetitive seeding of perennial ryegrass onto existing turfgrass fields in Fall 2015 and Spring 2016 resulted in a significant overall decline in weed abundance and higher grass density, when examining all 50 playing fields across three states (New York, Connecticut, and Maine). Regional and individual site differences may have influenced the efficacy of the repetitive overseeding strategy, but the overall trend indicated that the method is effective in managing weed populations without the use of herbicides. In 2017, two full-day workshops highlighted the latest

EDITOR'S NOTE: This material was gleaned from a report titled "School IPM Outreach and Research Activities, NYS IPM Program, 2017." Thanks to the New York State Integrated Pest Management Program for sharing with our readers.

Wood-lined edges near athletic fields are a higher risk area for ticks than fields themselves.

information on providing safe playing surfaces on sports fields. Topics included the basics (fertility, irrigation, mowing); advance techniques (overseeding, seed selection, and turf repair); and pest prevention, identification and management.

Biological Pest Control on School Athletic Fields: Kyle Wickings (Entomology, Cornell) is implementing a project to apply NY-native beneficial nematodes (targeting grubs) to school playing fields and to assess their survival in these fields. Teachers and students at participating schools will participate in the data collection, and training workshops will be offered to participating teachers to help them incorporate this data collection into their science classrooms. During 2017, NYS IPM staff assisted Wickings in developing educational materials, planning teacher recruitment and teacher training workshops to be conducted in 2018, and recruiting pilot locations.

NYS IPM Program staff participated in meetings, organized by the NYS Department of Health, of the Statewide School Environmental Health Program Steering Committee. The goal of this project is to promote sustainability and networking in promotion of school environmental health in NYS. A subcommittee, within which the NYS IPM Program had a key role, developed the NYS Clean, Green, and Healthy Schools, a recognition program for schools. We are assisting in the recruitment of schools to pilot the program.

NYS IPM Program staff collaborated with members of the National School IPM Steering Committee in the promotion of school IPM implementation nationwide (http://www.ipminstitute.org/school_ipm_2020/steering_committee.htm).

Geese on school grounds

GEESE WERE THE ONLY school pest situation that substantially increased in the 2013 statewide survey compared to the 2001 survey. In November 2014, the Rochester CSD contacted the NYS IPM Program about a long-term goose problem at a high school athletic field complex. We made a site visit, interacting with the district and school groundskeepers and athletic directors. We worked with the district to hold a goose on school grounds seminar in 2015. Participants in similar meetings indicated that they plan to implement managing turf with geese in mind (including planting fescue), a variety of hazing techniques, exclusion along shorelines and retention ponds, and round ups.

[We] successfully applied for a NYS Community IPM grant to address the goose situation at the school. A suburban school district joined us in this project. School personnel have been trying various harassment techniques. Technique efficacy is not the only important aspect. The technique must also fit into the desires and workday of school staff. The suburban district preferred using a radio-controlled model truck while the city school favored an air dancer. We have begun developing community collaboration in the vicinity of the high school to address limiting goose production. **/ST/**

New synthetic field technology aims to keep infill in place.

Thatch layer in synthetic turf for stability

There is a lot of information available about synthetic turf fields, but it can be difficult to discern between marketing speak and research-driven facts. Sports Turf Company has been in the business of athletic construction for 26 years. We build running tracks, native and full underdrain natural grass fields, synthetic turf fields and everything in between. We pioneered many of the best practices in constructing synthetic fields. Recognized by American Sports Builders Association to have four Certified Field Builders and two Certified Track Builders on staff, we are among the Southeast's foremost experts in specialty field and track construction.

Needs assessment

CONVERSION OF natural grass fields to synthetic turf may be the best choice depending on many factors. Making the right decision the first time is key to good fiscal management and raising the bar for athlete safety. Start with a needs assessment:

- What sports will be played on the field?
- Will it be used for practice and games?
- Will the community share the field for rec league play?
- Who is responsible for field maintenance?

EDITOR'S NOTE: This article was written by a representative of Sports Turf Company, Inc. Aaron McWhorter, the company president, opened shop in 1991 with a mission to provide quality athletic facility construction services.

- Do you have issues with field drainage and rainouts?
- Rank the importance of safety, cost, durability, playability, and visual appeal.

Evolution in safety

AstroTurf originally created artificial turf in 1965 and by the 1990's synthetic turf evolved to include sand and rubber particles in sparsely tufted polyethylene fibers. This change meant the game was now played on the rubber infill with the fibers relegated to only serving a role as a grass lookalike. These systems offered more cushion, but have shown to result in more lower extremity injuries.

When you see black rubber spray out every time a player cuts on the field, it means that game is played on 1990's technology. Cleats sink into the older, high-rubber fields.

Modern, 4th generation fields incorporate a thatch layer to hold the sand and rubber infill in place. That means footing is more consistent across the entire field and allows athletes to pivot like on a well-maintained natural grass field.

Pads becoming more important

GMAX MEASURES the force reduction of a field. A lower Gmax reduces the likelihood of an athlete receiving a concussion from impact with the field. A Gmax reading above 200 means life threatening head injuries may occur. By comparison, a well-maintained natural grass field may have a Gmax of around 85.

Brock USA is at the forefront of testing and design of pad systems to improve safety of synthetic turf fields. By adding a Brock pad underneath, Gmax readings stay much closer to natural grass fields. Field systems over a pad are firmer for faster play, reduce incidence of concussions and ankle/leg injuries.

So what can you do as a parent, a coach or a young athlete? Ask what turf systems are being considered by your school or park. Advocate for systems that have more fiber and less rubber. Invite experts to speak to stakeholders about safety. Read and compare warranties. Research manufacturers on Google for product histories and performance. **/ST/**

The Sports Turf Company from Whitesburg, GA was formed in 1991.

Crumb rubber flying around isn't the latest technology.

Interseeding improved bermudagrass

Improved seeded bermudagrasses have been on the market for some time but have gained popularity lately. Once introduced into the turfgrass industry these grasses were applied anywhere from the typical home lawn to high-end venues like NFL fields. In the hands of professionals, these bermudagrasses give turf managers greater flexibility and allow for the improvement of athletic field quality in various situations.

There are several situations when a manager may consider using an improved seeded bermudagrass cultivar over other grasses including:

- Increased tolerance of low temperatures
- Fewer expenses than establishing vegetative cultivars
- Less soil disturbance and subsequent interruption of play
- Longer playing conditions with later retention of fall color
- Increased turfgrass quality through color, density, and leaf texture

Bermudagrasses are known to not have a great deal of cold tolerance. With greater use in northern climates, increased susceptibility to winter kill has become a concern. Even in southern climates and in the transition zone, winter injury is a factor within certain cultivars. Improved cultivars such as "Monaco" offer a quick method of re-establishing a bermudagrass field from severe winter kill.

Inter-seeding "Monaco" directly into an existing common bermudagrass can increase the quality of even a healthy existing bermudagrass stand. Monaco bermudagrass is a more aggressive cultivar and will eventually outcompete a common type bermuda. For facilities operating on restricted budgets, this method can offer a great solution for field improvement. Other benefits over common bermudagrass would include greater disease resistance to leaf spot and spring dead spot, not to mention a more desirable turf appearance through color and texture.

When establishing elite bermudagrasses, as they are often called, it is best to use a slit seeder with two passes in different directions while placing the seed about 1/4 inch into the soil. Be sure to water frequently for 7 to 14 days throughout the germination process then slowly reduce the frequency. Also keep in mind the previous use of chemicals.

Interseeding an improved bermudagrass such as "Monaco" offers a great choice when trying to increase the quality and playability of your athletic field. If a preemergent herbicide was previously applied, pay close attention to application dates and always read the label to insure seeding is outside the window of chemical activity.

For a strong, healthy stand of an elite bermudagrass like "Monaco" apply an appropriate fertilizer at 1 pound of nitrogen per thousand square feet upon emergence, followed by similar applications every month of the remaining growing season. Before long, you will realize the potential of improved seeded bermudagrasses that so many are witnessing today.

PRODUCTS

REDEXIM SPEED-CLEAN MACHINE

The Redexim Speed-Clean is extremely effective at keeping your turf in its best possible condition. With the ability to mount on a tractor, or be pulled with a UTV, this ground-driven unit is fast and simple to operate. The paddle brush system allows the Speed-Clean to lift the infill from the surface where it is separated from the debris. The infill is returned to the surface and brushed in, while the unwanted debris continues across the sieve to be collected in bins at the rear of the unit. The adjustable spring tines aid in decompaction, while the rear brush grooms the surface to leaving a pleasing finish.

GREENSGROOMER SYNTHETIC TURF MAINTENANCE

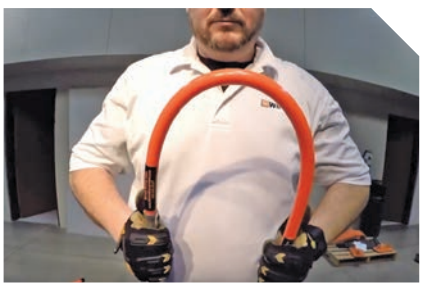
The leader in synthetic sports turf maintenance equipment, GreensGroomer products are considered the industry standard by turf professionals throughout the world. For example the LitterKat Synthetic Turf Sweeper is designed to sweep up light debris from the surface without displacing infill material, and the perfect choice for keeping synthetic sports fields clean, safe, and ready for action. Dual vibrators in the collection baskets quickly and easily redistributes infill while collecting debris such as paper, pen and pencils, rocks, shoe spikes, and athletic tape. It's also equipped with a tow-behind magnet for pickup of unwanted ferrous metal objects. The powerful 6-foot unit pulls objects from deep within the surface, collecting things like track spikes, bobby pins, safety pins and nails.

HYDROBLOX CONTROLS HOW AND WHERE WATER FLOWS

Domos Water Technologies' HydroBlox technology provides solutions to controlling how and where water flows. Made from environmentally friendly, recycled material, HydroBlox HydroPlanks are durable and will never crush or settle. The product's high-void structure allows for a drainage rate greater than stone or pipe. Fast and easy to install, you will save up to 80% on installation. HydroBlox use advanced capillary action to redirect storm water in any direction, without clogging. Installation only requires a 2" x 12" trench

Playing surface before (top) and after (above) installation of Domos Water Technologies' HydroBlox

and no aggregate or stone. HydroPlanks can improve drainage efficiency and performance of natural grass or artificial turf.



"VIRTUALLY INDESTRUCTIBLE" PLOW MARKERS

Winter Equipment announced that it will make its Winter premium Plow Markers available not only to municipal accounts, but to contractors and general distributors as well. The premium plow markers, which have been in the municipal market for nearly 8 years, have proven to live up to the motto, "Virtually Indestructible." With a core made from the same type of galvanized steel carbide cable used to make arresting wires on carrier decks, the plow markers feature a high-strength, nonrusting, pressed metal base for easy installation and a high-visibility orange, impact-resistant polymer cover. Available in four lengths, 24", 30", 36" and 48", the plow markers ship complete with all hardware needed for quick installation. Additionally, Winter Equipment donates a portion of each plow marker sale to the Salvation Army.

NEW SPEEDZONE SOUTHERN EW

PBI-Gordon has developed new SpeedZone Southern EW Broadleaf Herbicide for Turf, a novel, emulsion-in-water (EW) formulation. SpeedZone Southern EW offers a lower odor profile and lower Volatile Organic Content (VOC) compared to original SpeedZone Southern, and the EW formulation technology creates smaller particle sizes, helping improve efficacy by letting more active ingredients impact the leaf surface. It provides the same performance that made SpeedZone Southern an industry favorite, controlling more than 70 tough broadleaf weeds, including dollarweed, ground ivy, and spurge. And because it's formulated specifically for sensitive southern turfgrasses, SpeedZone Southern EW is highly selective in established cool-season and warm-season turfgrasses. SpeedZone Southern EW is labeled for use in the most common turfgrass species, including centipedegrass, seashore paspalum, common St. Augustinegrass, and zoysiagrass.

NEW COMPACT TRACK LOADER

ASV Holdings Inc., introduces the new RT-25 Posi-Track compact track loader. Its size makes the loader the industry's smallest sit-in CTL. The RT-25 is also a safer, more productive alternative to walk-behind and stand-on mini loaders in applications such as landscaping, construction and snow removal. The RT-25 measures just 48 inches wide, making it easy to drive through tight spaces while minimizing the risk of property or machine damage. The unit's 3,755-pound operating weight further reduces risks of damage

to turf or sensitive surfaces. That low weight also contributes to increased flotation and traction for snow clearing on sidewalks, driveways or in alleyways. A completely smooth turf track is also available to minimize the risk of damage. Thanks to the machine's straightforward controls, learning how to use the unit is fast and simple. Filters and other daily serviceability checkpoints are within easy reach thanks to a large hood opening that gives access to all sides of the engine.

NEW ELECTRIC SPREADER ATTACHMENT

RYAN has introduced its new electric spreader attachment for Lawnaire ZTS aerators. The 120-lb. commercial spreader from Spyker lets users aerate and overseed with the same machine. The exclusive mount allows for simple and accurate installation without cutting, drilling or fabrication. The spreader's controls are conveniently located to the right side of the ZTS control panel for ease of operation. The spreader hopper holds up to 120 pounds of material, so operators can complete large tasks with fewer refills, getting the job done faster. Variable speed control also comes standard, mounted within arm's reach of the operator platform, allowing for easy control of a spread swath of up to 16 feet. The design enables it to project enhanced spread coverage while maintaining equilibrium using the AccuWay adjustment cable. The AccuWay adjusts the material flow forward or backward, which allows the operator to maintain a balanced spread pattern, regardless of the chosen material.

STEINER INTRODUCES NEW 450 TRACTOR MODEL

Steiner unveiled its newest tractor model, the 450DX, at the 2018 GIE+EXPO. The new tractor has efficient 25-horsepower, air-cooled engine and single-speed transmission. The more accessible 450DX features the same oscillating frame, articulated steering, four-wheel drive and Quick Hitch attachment system available on all Steiner 450 tractors. All models of the Steiner 450 deliver excellent performance and control, even on slopes of up to 30 degrees (when equipped with dual tires on front and rear axles). The 450 is truly an all-season machine, capable of handling a wide variety of attachments that will help users mow, blow, plow or dig all year long. The Quick-Hitch attachment system makes it easier than ever to switch between attachments, requiring just a few minutes and no tools. From snow blowing to mowing, there's virtually no downtime between tasks. Popular accessories include hand controls, Level 2 suspension seat, dual wheel kit, and rear weight kit.

LESCO LAUNCHES CARBONPRO

SiteOne Landscape Supply has introduced LESCO CarbonPro-L with MobilEX, a liquid biological soil amendment. CarbonPro can be tank mixed with fertilizers, herbicides and insecticides when applied to turf and landscape plantings. The multi-solution product deepens and strengthens roots, helps with stress recovery and prevention, improves greening, assists with seed establishment and provides other benefits. The key to CarbonPro is its exclusive active ingredient formulation, including MobilEX nutrient transport technology, humic substances and kelp extract to harness the power of plant-microbe interactions and organic soil sciences to maximize plant health. In tests, CarbonPro promoted 75 percent more root mass under 30 percent less nitrogen than positive and negative controls in tall fescue.

THE TIRE PLUGGER

Ideally all tubeless tires should be repaired from the inside/out. But in an emergency situation that's not always possible. That's when the Stop & Go Tire Plugger can do what no other tire repair kit can. It allows for an 'on the spot' and 'on the wheel' repair to virtually any tubeless tire. And it seals the puncture on the inside. The Plugger is a spring-loaded gun that 'drives' the plug into the hole. The shaft of the plug expands under pressure to fill the puncture. The mushroom head of the plug seats on the inner wall allowing no air to escape. And it's easily stored so you're always prepared. Included is: the plug gun, nozzle, probe tool, reamer/rasp tool, retractable blade, (25) rubber mushroom plugs that measure 5/16" in diameter x 3/4" in length, and detailed instructions.

NEW EXMARK STAND-ON MOWER

Exmark introduces the 2019 Staris stand-on mower. Optimized for a low center of gravity, the engine placement, operator position, fuel tanks and tower structure are all designed to enhance weight distribution for improved stability and overall performance. The Staris frame is constructed of high-strength tubular steel with the same wall thickness as the industry-standard Exmark Lazer Z zero-turn riding mower. Staris is available in E-Series models, with a choice of 32-, 36- and 44-inch UltraCut Series 3 cutting decks, and large-frame S-Series models, with a choice of 48-, 52- or 60-inch UltraCut Series 4 cutting decks. Exmark optimized the frame design and caster wheel positioning for each cutting deck width to deliver a superior quality of cut. The side-discharge UltraCut cutting decks also offer the ability to mulch or bag clippings when equipped with the appropriate accessories from Exmark.

NEW INDUSTRIAL LITHIUM BATTERY CHARGERS

Delta-Q Technologies announced the release of four new high frequency lithium battery chargers in the ICL Series. The ICL1200 and ICL1500 respectively provide 1200W and 1500W. The 85V models designed to optimally charge lithium battery systems of any lithium-ion chemistry from 14 to 24 cells in series, where the 120V models charge from 21 to 34 cells in series. Delta-Q's new lithium charger is suitable for use on any electric machine including scooters, light electric vehicles, aerial work platforms, and sports and utility vehicles. Delta-Q's software team has built over 200 custom algorithms, ensuring that users experience better runtime and flexibility for different lithium battery chemistries. The ICL Series, like the rest of Delta-Q products, are IP66-rated to protect against dirt and fluids, and its mechanical design and component selection resists vibration, shock and temperature extremes.

STMA membership renewal and why it's important

The holidays are here – and so is the end of our membership year! Every year, STMA works hard to produce new educational materials, recognize certification and award recipients and push for the safety of all fields around the globe. 2018 has proven to advance the industry further into innovation, awareness and professionalism, and we are excited to celebrate these accomplishments at our 30th Annual STMA Conference and Exhibition in January. Our members are always up to date on what is happening within the association and the industry, and we do not want you to miss out on that in the upcoming year, so we urge all members to avoid interrupted membership by renewing before the December 31 year-end.

Your STMA membership is an investment for your future, that's why we pride ourselves in providing a membership that connects you with a network of peers who are willing to share their best practices, provides opportunities for education to help you do your job better and quick access to information, and resources to help you save time. If you are considering joining STMA, the recognized leader in championing the sports turf industry and its professionals, we are sure to have a membership category for you. STMA has specific membership categories for every professional in the sports field management industry.

Benefits of membership

- A monthly electronic newsletter that communicates association and industry information.
- Access to the Member's Only section of STMA.org, which has a real-time membership directory and hundreds of technical educational resources that are specific to sports field management.
- Access to Michigan State's Turfgrass Information File, the green industry's greatest resource for up-to-date technical information, a $100 value.
- Ability to enter your field in the nationally recognized Field of the Year Awards Program.
- Opportunity to become a Certified Sports Field Manager (CSFM) to showcase your professionalism and to have your facility certified as Environmentally Responsible.
- Significant savings on registration to STMA's annual and regional conferences, and discounts to other organization's education.
- Opportunity to participate in volunteer leadership positions.
- Opportunity to join one of STMA's affiliated chapters for a strong local network. (Each chapter sets its own local dues.)
- *SportsTurf* magazine each month, a $40 value.
- The ability to apply for scholarships (students only).
- Discount on advertising in *SportsTurf* magazine and discounted exhibitor booth at the annual Conference (commercial members only).

How to renew

MAKE SURE TO RENEW YOUR MEMBERSHIP before the December 31 year-end deadline to avoid missing out on these great benefits! Renew online by logging into your account and adding your membership to your cart through our Products page. Any questions about membership or how to renew can be directed toward STMA HQ at 800-323-3876 or *stmainfo@stma.org*.

Membership categories

- **SPORTS TURF MANAGER,** IF YOU ARE PRIMARILY RESPONSIBLE FOR MANAGING OR MAINTAINING SPORTS FIELDS.
- **SPORTS TURF MANAGER 1ST TIME NEW MEMBER,** IF YOU HAVE NEVER BEEN A NATIONAL MEMBER (SINCE 2000), YOU ARE ELIGIBLE TO RECEIVE A FREE CONFERENCE REGISTRATION TO BE USED WITHIN 3 YEARS.
- **SPORTS TURF MANAGER ASSOCIATE,** IF YOU ARE PRIMARILY RESPONSIBLE FOR MANAGING OR MAINTAINING A SPORTS FIELD(S) AND YOUR ORGANIZATION ALREADY HAS AN STMA SPORTS TURF MANAGER MEMBER EMPLOYED. THIS ASSOCIATE HAS THE SAME BENEFITS AND PRIVILEGES AS THE SPORTS TURF MANAGER; DUES ARE LOWER BECAUSE OF MULTIPLE MEMBERS.
- **SPORTS TURF MANAGER ASSOCIATE 1ST TIME NEW MEMBER,** IF YOU HAVE NEVER BEEN A NATIONAL MEMBER (SINCE 2000), YOU ARE ELIGIBLE TO RECEIVE A FREE CONFERENCE REGISTRATION TO BE USED WITHIN 3 YEARS.
- **AFFILIATE,** IF YOU ARE INDIRECTLY OR ON A PART-TIME BASIS INVOLVED IN THE MAINTENANCE/MANAGEMENT OF SPORTS FIELDS (COACHES, ATHLETIC DIRECTORS, VOLUNTEERS, ETC.).
- **ACADEMIC,** IF YOU ARE IN TEACHING, EXTENSION OR RESEARCH.
- **STUDENT,** IF YOU ARE A FULL-TIME STUDENT.
- **COMMERCIAL,** IF YOU WORK FOR A COMPANY ENGAGED IN A COMMERCIAL ENTERPRISE PROVIDING SERVICES AND/OR PRODUCTS TO THE SPORTS TURF PROFESSION (CONSULTANTS, ARCHITECTS, DESIGNERS, CONTRACTORS, MANAGEMENT COMPANIES, DISTRIBUTORS AND MANUFACTURERS, ETC.).
- **COMMERCIAL 1ST TIME NEW MEMBER,** IF YOU HAVE NEVER BEEN A NATIONAL MEMBER (SINCE 2000), YOU ARE ELIGIBLE TO RECEIVE A FREE CONFERENCE REGISTRATION TO BE USED WITHIN 3 YEARS.
- **COMMERCIAL ASSOCIATE,** IF YOU ARE THE 2ND PERSON (OR MORE) FROM A COMMERCIAL COMPANY.
- **RETIRED,** IF YOU ARE RETIRED AND NO LONGER SEEKING FULL-TIME EMPLOYMENT WITHIN THE SCOPE OF ACTIVITIES OF ANY STMA MEMBERSHIP CATEGORY, AND HAVE BEEN A MEMBER FOR A MINIMUM OF 5 YEARS, YOU MAY BECOME A NON-VOTING MEMBER OF STMA AND ARE NOT ELIGIBLE TO HOLD ELECTIVE OFFICE. **/ST/**

FIELD OF THE Year

FIELD

PONY FIELD

MCLEAN COUNTY PONY BASEBALL

LOCATION

Bloomington, IL

- **Category of Submission:** Schools/Parks Baseball
- **Sports Turf Manager:** Andy Ommen
- **Title:** Head Groundskeeper
- **Education:** BS in Business Administration, Illinois Wesleyan University
- **Experience:** I have been the volunteer Head Groundskeeper for 15 years at this complex.
- **Full-time staff:** I am the only one dedicated full-time to the groundskeeping of the complex and this field.
- **Seasonal staff, 2017:** Derek Wegman, Ryan Woodside, Dalton Bruso, Austin Woodside, Will McLeese, Griffin Bruso, Austin Eichensehr, and Zach Jones. This paid crew is primarily responsible for repairs and getting games ready for each day.
- **Original construction:** 1986
- **Turfgrass variety:** Kentucky bluegrass
- **Overseed:** I overseed as needed in on deck areas, front of mounds, umpire areas and coaches' boxes, as well as any other area that is needed. I use a blend of 50/50 rye and Kentucky bluegrass for quicker germination with the rye. This is done throughout the season. I carry a bottle of seed on my mower and throw seed down as I see divots when I am mowing.
- **Rootzone:** Native soil
- **Drainage:** We rely on surface drainage on infield skin and ground drainage in turfgrass areas.

***SportsTurf:* What are your job responsibilities?**

OMMEN: First, I am a 16-year **volunteer** at my complex. So it is hard to say it is a "job." It is a heckuva hobby!

I oversee the entire grounds and turf management program at the complex, which consists of six fields and players ranging from 5 years old to 60. I manage a grounds crew of 6-8 high school and college guys who are seasonal help, and the other volunteers who help out at the complex when it comes to our turf management. But my responsibilities include all turf management activities. We host about 1,200 events each

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

summer with a summer season ranging from April 1 through July 30 each year. We have approximately 1,100 baseball players on our fields.

ST: What attracted you to this industry?

OMMEN: I am a sports enthusiast and I have always been fascinated by the precision of turf care at major athletic sports. However, what attracted me to this position was 16 years ago watching my son's 10U team lose their division championship game on a bad hop. The fields at our complex were in horrible condition, very difficult to play on, and flat out dangerous. I asked a friend of mine, who was a member on the Board of Directors, who I could talk to about making the place better. What I learned was that there was absolutely zero grounds management program. It literally was "oh, anyone who wants to can jump on a mower when they have time." I said, what about irrigation, fertilization, aerating?" The answer was "we have some bags of fertilizer that have been sitting in our shed for a few years, don't know much about it."

I asked if I could get involved and I was immediately told yes. I didn't know much about it, but I figured they needed help. I was coaching my son's team, but wanted to get out of coaching. I am a football guy, not a baseball guy. So I knew my tenure at coaching was short lived but I wanted to be involved and help.

After nosing around a little, I started to put together a turf management program that slowly grew over the next several years. I pushed the board of directors for some money to sink into the fields and improve the safety of the playing surfaces. We first focused on just the infields by fertilizing them and installing irrigation. Then we moved to getting the outfields irrigated. This was possible through an incredible donation from a local car dealership.

A local community college started a baseball program and needed a home field. Was very new to trying to figure out turf management and new I needed to figure it out quickly. I attended a seminar put on by Turface in Chicago area to try to learn more. That is where I met Larry Divito of the Minnesota Twins. He has been a tremendous mentor to me throughout the years. I also met with a local turf care company who supports a couple of our golf courses and told them the plans of turning the complex around.

The first time I had our fields aerated, the right way, I was almost banned from the complex. They thought I had ruined the fields. They had never seen aeration done to that extent. It took a while to gain the trust and respect from the board, but over the next 2-3 years they saw the results. Along with those results came an increase in our player population. Slowly we started buying true turf management equipment, based on priority and it has evolved into what it is today.

When I first started, I naturally focused my time and energies on the fields my sons (now 24 and 21) were playing on. Their fields were always the nicest of the fields because I wanted the best for them. I knew I needed to expand it to all the fields. That is when I proposed a seasonal "grounds crew" to the board. Being a non-profit organization, this took some convincing but overall, was accepted. The crew now is a tremendous work experience for guys learning how to manage their time, work load and getting a great tan through the summer. They take a lot of pride in what they do.

The 2017 FOY was one of the worst fields at the complex. It had a horrible lip that everyone in town knew about. "Oh, you are playing there, tell your short stop to be careful." My son was 2 years away from playing on that field and I knew I needed to dedicate my time to getting it better before he got there. I really dove into the safety issues (and I did this at every field) to get it fixed. From there, the rest was a regular fertility, aeration, water management and daily maintenance program. Today, the field performs incredibly. The biggest compliment comes from the umpires. I get compliments from them all the time saying, "That field NEVER has a bad hop." That, to me, is what I need to hear.

Winning the 2017 FOY Award was simply amazing. What an incredible honor. I am just a volunteer dad trying to make the place better for kids to play baseball. Until STMA, I had no idea I was doing anything that special. It just what we do. We hung a banner on the winning field statin it won an award. It is amazing the number of people who don't quite grasp the concept. But once you explain the significance of the award to them, I often get "I am not surprised, we have never played on a better field." Our community has come accustomed to playing on these playing surfaces, so it is always enjoyable to see visiting teams arrive at the complex.

ST: What do you do that's the most enjoyable?

OMMEN: The reward is watching kids play and learn the game of baseball without having to worry about the field. Fielding a ground ball shouldn't be done with fear, it should be learned with confidence. Safety is our number one priority and nothing gets my attention more than hearing "we had a bad hop."

Also, the reaction of visiting teams coming to play at our complex is tremendous. We often get asked "Can we really go out on that outfield and warm-up?" Yep, enjoy it! Sometimes I joke and ask them to take their shoes off first, ha ha.

Helping a tremendous organization and providing an incredible place to play baseball for our community and working along side the other volunteers really makes me happy. Also teaching our young seasonal help work ethic and taking pride in what they do is very rewarding. Being a volunteer and having a full-time position in the business world, I am not at the complex during the day for the bulk of our day-to-day field prep. It is up to them to get the job done without direct supervision.

ST: What changes if any are you considering or have implemented for the winning field in 2018?

OMMEN: From 2017 to 2018 there really wasn't a lot of changes made. That field has been in the same shape it was for 2017 for many years. I just finally submitted the FOY application. I expect myself and my crew to maintain the surfaces at the highest level. I guess I raised the standard and expectations of my crew to be able to maintain the field at the level it was without my hands on it every day like last year. This field is what it is, and our expectations of quality have not wavered.

ST: What are the biggest obstacles you deal with, and how do you try and overcome for them?

OMMEN: I think this goes along with any turf manager, and that is schedule. Our schedule goes from 4/1 through 10/15 with only about 1-2 weeks off in August. The timing to do repairs from all the wear and tear is extremely difficult. We are playing from nearly thaw to freeze on every single day possible. We have to sneak repairs and projects in when we can. We have small, 1-day breaks in our schedule in the early season and in fall giving us a day or two to not have to prep fields for games and allow us to have a "workday." I submit

this schedule to Mother Nature but she doesn't always seem to follow it.

Other obstacles include the fact that we are run by volunteers. Some days you have all the help you need, and other days nobody shows up. That is the tough part about getting things done without issuing paychecks. My seasonal staff is paid, so that helps, but they don't work the entire growing season. Also teaching volunteers the right way to do things is difficult at times. People have big hearts and want to help, but can often cause more work in the long run in trying to maintain a field at the level of our expectations.

Coaches and players are very passionate about their schedules. Sometimes we will be quick to cancel games, early in the year, if a field is marginal from rain and that is frustrating for coaches and players. We don't want to tear up a field early and have to scramble with it the entire summer. I often have to say, "I understand you are thinking about this game, today. But I need to manage this field for 165 games this summer."

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

OMMEN: Without a doubt it is gaining knowledge and ideas talking with other turf managers. The turf management community is amazing. It has tremendous camaraderie and everyone here is willing to help out anyone. It is awesome to get to bounce my issues, or ask for suggestions from other turf managers at my level in Parks and Rec, all the way up to MLB and NFL guys. Being around these guys inspires me (for the good or the bad because I want to do more) to continue to try to improve my fields every single year.

I hope my fields inspire other Parks and Rec managers and volunteers who do this sort of thing and also hope to sort of set the standard for what I possible at this level.

ST: What's the best piece of turf management advice you have ever received?

OMMEN: I think the best piece of advice was don't be afraid to ask questions. I remember that coming from Larry the first day I met him and many others – all of us are in this together, trying to make the best possible playing surface for our athletes. Never stop talking to your peers and learning from them. I stay pretty active on Twitter showing things I do throughout the year to try to give those that are not day-to-day turf managers ideas on maintaining their own fields.

ST: What are your passions and interests beyond your volunteer groundskeeping?

OMMEN: Outside of work I enjoy spending time with my family. I have a split family, with my older boys, Ben and Drew, 24 and 21 respectively. And my fiancé, Milissa, has two young children, Ashlyn and Brody, who are extremely involved in sports. My boys both went to TCU. As I said earlier, I am a football guy and played in college. I LOVE college football. I attend as many TCU football games as possible. I used to play a lot of golf, and hope to spend more time doing that as well, but need to train others how to do things to free up time to play more. ***/ST/***

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 Associationof New Jersey: www.sfmanj.org

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

North Carolina Chapter of STMA: www.ncsportsturf.org

Northern California STMA: www.norcalstma.org

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

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

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

Ozarks STMA: www.ozarksstma.org

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

Southern California Chapter: www.socalstma.com

South Carolina Chapter of STMA: www.scstma.org.

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

Texas Sports Turf Managers Association: www.txstma.org

Virginia Sports Turf Managers Association: www.vstma.org

Wisconsin Sports Turf Managers Association: www.wstma.org

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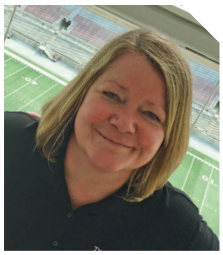


Q&A *with* PAMELA SHERRATT

Sports Turf Extension Specialist

Questions?
Send them to Pamela Sherratt at 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

Prepare now for spring rain

Q: ***How can we prepare our school fields for spring rains and avoid cancelled games?***

A: You can start preparing for that now. Take some time over winter to walk the fields and identify areas with standing water or poor surface levels. Do the same with skinned areas on baseball and softball fields. Take pictures and keep records of where those areas are and set priorities at to which areas get renovated first when the weather breaks.

This pro-active approach is the first step to making sure your fields are resilient.

Resiliency is a word I've heard a lot recently in regard to climate change and how we must be prepared for adverse weather conditions. Climatologists are predicting that dry areas of the country will get drier and wet areas will get wetter. They are also predicting that USDA Hardiness Zone maps will move northwest as temperatures increase and we'll be dealing with plants and pests previously only seen in southern states. In central Ohio, we have certainly seen an increase in the intensity and frequency or rain, leading to floods and saturated soils. Given that we typically get excessive rainfall in spring and fall in the northern states already, we can surmise that wet conditions are going to continue, and probably get worse. Rain events that happened every 50 years may just well be something we witness each year and we should start planning now on what that means for our industry and how we can create playing surfaces that can handle rainfall events. The answer to that of course is drainage, which must be our focus moving forward.

The most important factor in providing athletes with a durable field that drains is surface grade. In essence, fields that are not graded, or have low spots, will hold water. So while there are many ways to improve field drainage, like aeration, topdressing or drainpipe installation, I'm going to focus on surface grade because that's what ultimately dictates where the water goes.

In regard to baseball and softball skins, skinned infields should be laser graded every 2-3 years and this should be a standard line item in the maintenance budget. The goal is to create a 0.25 to 0.5 inch slope from the pitcher's mound to the outfield. Any less of a slope and the water won't move, any more of a slope and the water will take soil material with it and dump it into the edges, causing lip problems. Even with great surface grades, a heavy rain before a game can cause issues on skinned areas, so here are some extra tips:

- Before each game, fill in low spots – use infield mix that matches the existing soil mix, add 20% soil conditioner to it, and tamp it down to make sure it's firm and not going to move. Before it rains, if you have tarps, cover the pitcher's mound and home plate. If puddles do form, remove the water with cups, sponges, soaker pillows or pumps. It is also possible to create a siphon with a hosepipe. Lightly rake the wet area to create ridges in the soil. This increases the surface area and allows it to dry out faster. If you use a drying agent to soak up moisture, keep in mind that drying agents are typically finer graded than soil conditioners and should be removed from the infield after they have done their job. Never brush water off the infield, over-work the soil mix, rake too much, or ever use cat litter or corncobs as drying agents.
- In regard to natural grass athletic fields, drainage can be improved by maximizing surface drainage (run-off) via a laser-graded crown. A crowned field means that the grade of the surface slopes from the center down to all four sides of the field, allowing water to run off the playing surface. The average crown on an athletic field ranges from 1% to 2%, depending on which sport is being played, with soccer and field hockey generally requiring a lower crown height. Many professional regulations do not specify or prefer a crown on soccer fields, but those guidelines are typically based on sand-engineered fields, not native soil. The National Federation of State High School Associations recommends a slope of ¼ inch per foot from the center of the field to each sideline for football fields and a minimum of 1 to 1.5% percent slope on native soil soccer fields. On soccer fields with underground drainage, they recommend the slope should be no less than 1% slope. Under no circumstances should a native soil field be flat.
- In conjunction with a graded crown, interceptor drains are used to capture surface runoff that occurs due to the slope of the field. Interceptor drains are placed in areas that receive the most runoff, and as far outside of the field of play as possible to limit potential injuries. Interceptor drains give the surface water a place to go, rather than just sitting on the perimeter of the field.
- Skinned infields should be laser graded every 2-3 years and native soil fields should have a crown or slope that moves water from the surface to an interceptor drain. Proper grading is the cornerstone of ensuring that fields can shed water and host games. ***/ST/***

STMA Environmental Certification program continues to grow

After 4 years of development, the STMA Environmental Facility Certification program launched in 2016. Within 2 months, there were eight facilities in the program. Today, there are 34 certified with four facilities in various stages of the program.

The Waukegan (IL) Park District pursued certification as part of the city's commitment to environmental stewardship. "It was identified as a Waukegan Park District initiative under the Environmental Sustainability goal," says Noel Brusius, CSFM, SportsPark and Athletic Field Maintenance Supervisor.

At Real Madrid, (Spain) Paul Burgess, CSFM, Director of Grounds and Environment, cites their commitment to leadership as the reason they pursued certification for two fields. "As the world's biggest sports franchise, we feel it's our responsibility to lead and to work with industry partners such as the STMA, to help guide, certify and promote our work and facilities," says Burgess.

Brusius also cited leadership as a driver for their involvement in the program. "Achieving certification was an example of how the Waukegan Park District strives to be a leader in the community. We also feel this certification was a justification of professionalism offered through STMA," says Brusius.

Since the certification rollout, the program was reviewed at its one-year anniversary, and Version 2.0 was developed. That version was created after analyzing the most "missed" questions. Those questions were clarified, and several new questions were added.

Self-assessment and attestation

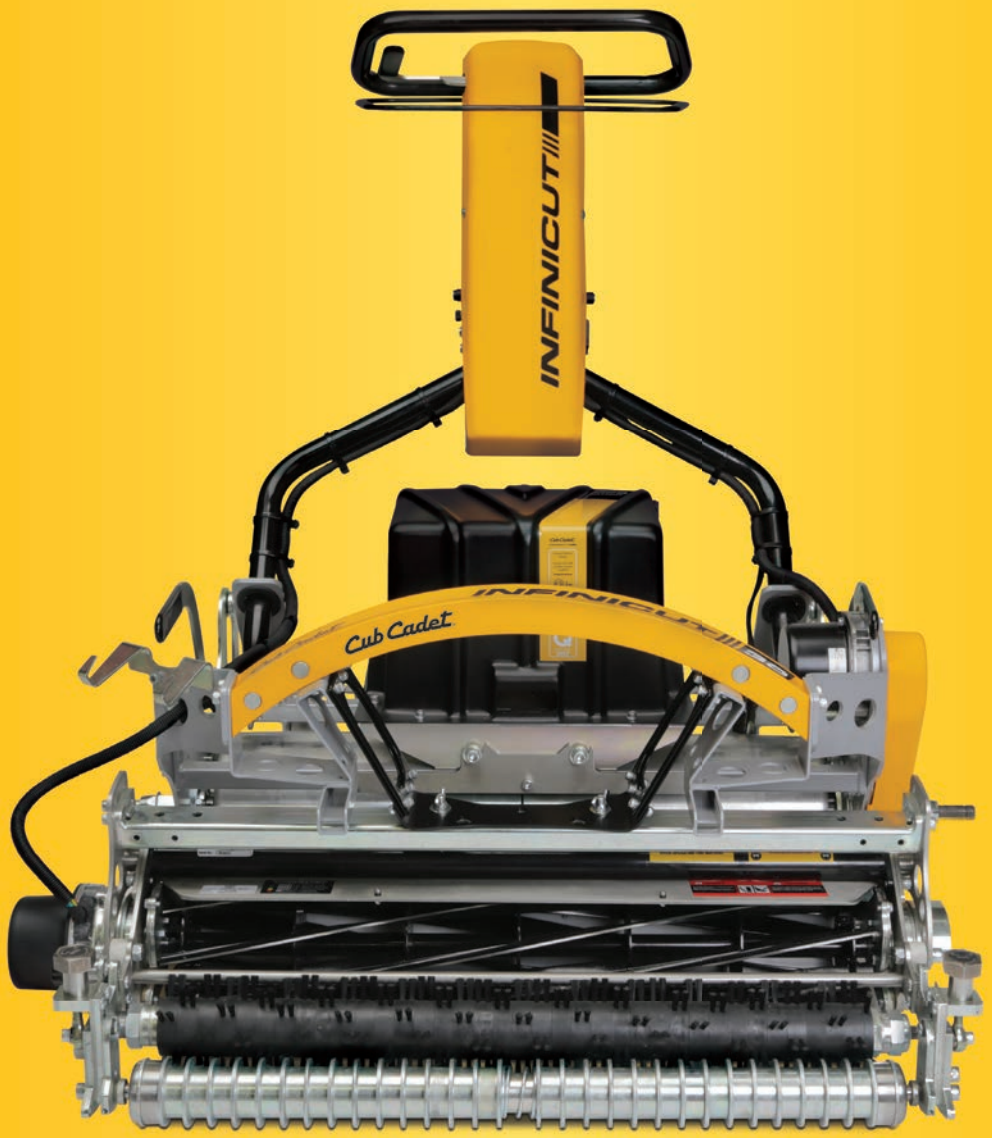
THE PROGRAM CONSISTS of a self-assessment of the facility that the sports field manager fills out electronically. STMA reviews that assessment, and an 80 percent pass rate on each section must be attained. Those sections include storm water management, fertilization, pesticides/IPM, recycling and educational outreach (considered one section), mowing, energy conservation, shop buildings/storage and irrigation. The instrument also includes questions about composting, but that section is included only as education only and the score is not included in the results. If 80 percent is not achieved on one or more sections, those can be re-taken within 6 months showing the improved practice(s).

Photos courtesy of Noel Brusius, CSFM, Waukegan (IL) Park District

After achieving an 80 percent pass rate on each section, attesting the facility is the next step. An attester is engaged – either a Certified Sports Field Manager (CSFM) or an academic in turfgrass management – who completes a face-to-face walkthrough of the facility to validate that the best management practices noted on the assessment form are in place. The attester completes an electronic form and recommends the facility for certification.

This program differs from the Certified Sports Field Manager (CSFM) that STMA also developed and administers. The CSFM program certifies the individual on knowledge, skills and abilities through a written test and subsequent continuing education and service to the industry requirements. The CSFM keeps that professional designation wherever he/she moves within the industry. The Environmentally Responsible designation stays with the facility, even if the sports turf manager is no longer there. Both certifications are valid for 3 years before their respective recertification processes are required.

The facilities that are recommended for Environmental Facility Certification have the option of receiving a plaque or banner to display their achievement. Public awareness throughout the park district is a goal of Brusius. "We recently had a group from the Center for Conservation Leadership (CCL) on site to



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