

IN THIS ISSUE: Avon (IN) High School, Schools/Parks Soccer Field of the Year
THE OFFICIAL PUBLICATION OF THE **SPORTS TURF MANAGERS ASSOCIATION**

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Weed Control Lessons Learned

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- » Impact on soil from fraise mowing bermudagrass
- » The Interview: Jeff Fowler
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On the cover: Thanks to Jim Brosnan, PhD, Greg Breeden, and José J. Vargas of the University of Tennessee in Knoxville, and *Tennessee Turfgrass* for sharing these lessons learned about weed control last year, and allowing us to use this photo.

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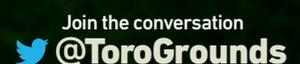


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FROM THE SIDELINES

Speaking with one voice



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

AFTER THE CHAPTER OFFICER TRAINING SESSION at January's STMA Conference, Jason Bowers, CSFM, a sports turf supervisor from Maryland, stopped me to ask for our help in publicizing a new project the Mid-Atlantic STMA chapter had started. Jason said it is MASTMA's goal to create a comprehensive Best Management Practices (BMP) manual to help protect the sports turf management industry from unnecessary legislative barriers that might inhibit producing quality work. The chapter wants to inform the public about safety and have a more official response available to decision makers; other green industry factions are ahead of sports turf managers on this, he said.

Bowers said, "This started at the MASTMA 2018 when Dr. Frank Wong was giving a talk about pesticides. I work for Montgomery County Parks in Maryland. Back in 2014 or 15 the Montgomery County Council decided they were going to ban pesticides come 2020. Supporters of the bill specifically did not target agriculture or golf."

"Dr. Frank Wong attended many the council meetings," Bowers said. "He tried to explain why proper pesticide applications are not harmful to environment, but no one listened. At the meeting I got with Dr. Wong and I explained to him who I was and where I worked, and I just wanted to know what happened in those County Council meetings. And he told me basically, landscape guys and sports turf guys were singled out.

One of the reasons why Montgomery County council members did not target golf was that superintendents have a history of being actively engaged on local issues and also had golf-specific, university-backed BMPs to help defend themselves with. These BMPs were generated through GCSAA's national BMP initiative and serve as both a guide for golf courses to manage pesticide and fertilizer applications properly, but also to show the public how they were being stewards of the environment.

"Patrick Coakley overheard our discussion and stepped in to say, 'Let's get this ball rolling,'" Bowers said. "Patrick reached out to Nicole Sherry, Dr. Wong, Hunter Swisher and me and we created the MASTMA outreach committee and started working on what we needed."

Coakley, a CSFM who works for DuraEdge, said, "Many of the frustrations I have heard from sports turf managers come down to a very simple point: relevancy. We want to be seen as professionals. We want to be seen as the expert in our field. We want to be the ones our employers come to when they need answers. We want to be relevant.

Dr. Wong told Coakley that BMPs show you have a plan, are making educated decisions, are already regulated and licensed and follow those laws.

"Looking deeper I realized that this document would contain many of the arguments that STMs make while venting at conferences. It says, 'here we are, we have always been here protecting the athlete, the environment and providing great fields. We are the experts and there is no need to look further,'" Coakley said. "I see this as a great opportunity. Why else would a local STMA chapter exist if not to get involved in this fight? We are a little late to the game but it's not too late. Time to get after it now."

As MASTMA puts together the pieces, it needs financial assistance; their goal is \$40,000. "MASTMA started the project with \$1,000 in seed money, and we are working with Stacey Kingsbury, a consultant who has written BMP manuals for superintendent associations. This will be a 200+ page document with references and photos that will take more than a year to complete. We are asking for funds to pay for this as well as printing and distribution," said Bowers.

See the whole story on page 18. All contributions to the non-profit MASTMA are tax deductible. **/ST/**

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PRESIDENT'S MESSAGE

Speaking with one voice



Jody Gill / CSFM / jjgill@bluevalleyk12.org / @JodyGillTurf

STMA BECAME AWARE of legislation in Connecticut that bans the state or its municipalities from purchasing and using synthetic turf. Those on both sides of the issue were using inaccurate information to support their positions. STMA Board and staff immediately waged a dedicated campaign to correct misinformation that was being disseminated about natural grass and synthetic turf surfaces. One component of this campaign was the development of an infographic that addresses and corrects the inaccuracies. Through our PR firm, the infographic was distributed to legislators and media in Connecticut, co-branded by The Institute (STMA's new, expanded knowledge center) and the New England STMA chapter. An STMA-branded version was also circulated to chapters and the national media (see page 46).

More legislative issues that affect our work are escalating around the country. In Maryland there are two bills: one to classify the disposal of synthetic turf and infill as hazardous waste, and a second that specifies public funds can only be used for maintenance and upkeep of natural grass athletic fields and drainage systems. Connecticut has four more bills focused on pesticides on their agenda. Minnesota, New York and California may also be introducing legislation that directly impacts our industry.

STMA is committed to be the go-to resource for fact-based information. If you know of anything on the horizon for your state, please contact STMA headquarters so we can help you respond.

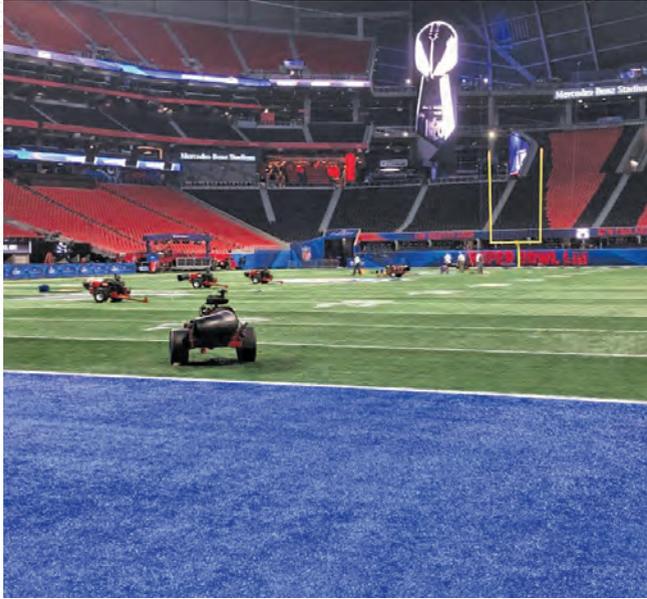
We need Chapters to help monitor legislation. Designate a group of members to track potential legislation. They can check the House and Senate bills at the state's legislative website. According to the National Conference of State Legislators (NCLS), every state offers free public access to bill status information on the Internet. At least 37 state legislatures offer customizable tracking and notification services. NCLS.org also has a state bill tracking database specific to the Environment and Natural Resources.

Once you have the tracking process in place, you'll need to be able to mobilize quickly if something is proposed that can negatively affect your chapter members' work. Your board may need to take a position and provide that position to your legislators. Sometimes your board may need to correct inaccurate information, as the STMA Board did with the Connecticut bill. STMA has an Advocacy Manual and a list of each state's environmental department that may be helpful as you develop your program. These can be found at STMA.org on the members-only side under The Institute's tab.

Another key component of advocacy is to build relationships now with your legislators. This should be relatively easy since every legislator has most likely been to an outdoor sporting event and can connect the dots on the important job your members do.

As an industry that is focused on environmental stewardship and has been following best management practices for years, together we must educate legislators on the facts so that better decisions are made for sports fields and our athletes. **/ST/**

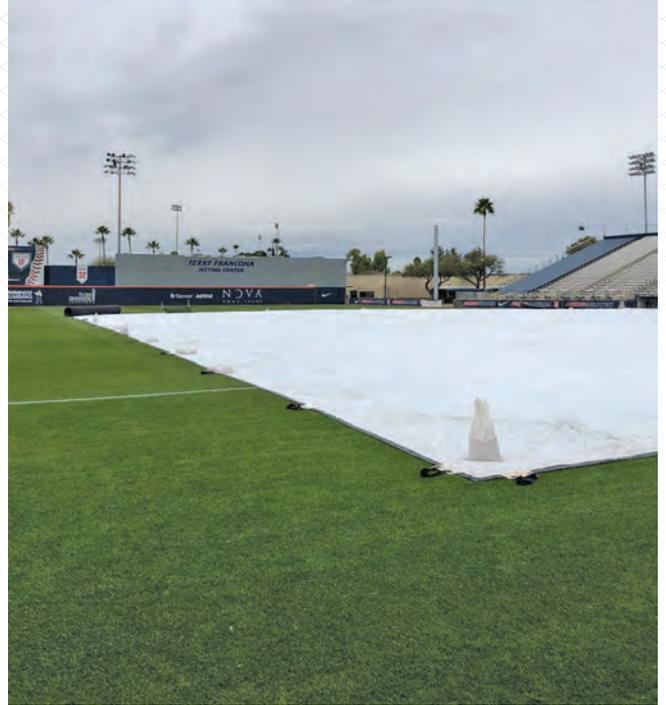
Jody Gill, CSFM



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Atlanta, GA February 3

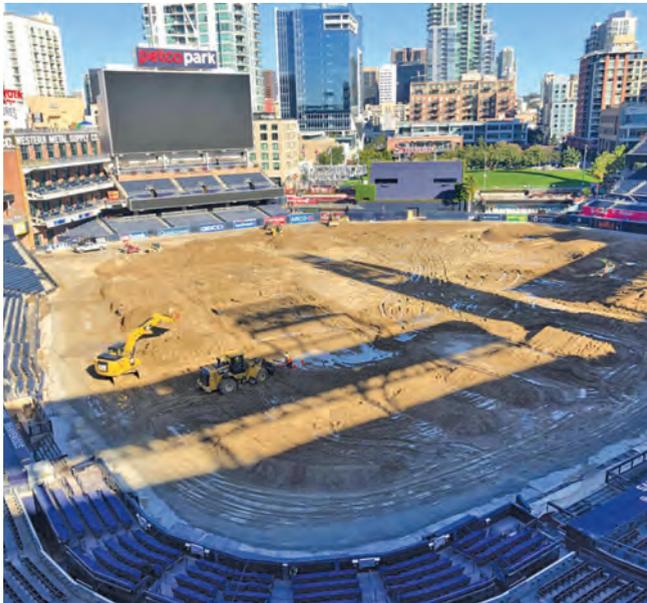
Carefully painting and drying the field. Final touches before kickoff. #SBLIII @montybr @WA_Morgan



@UA_TURF_TY

Tucson, AZ February 14

Happy game day eve! Nothing like pulling tarp on the first home stand! @ArizonaBaseball @FieldExperts



@SODSOLUTIONS

San Diego, CA February 7

@PetcoPark is moving out the monster truck dirt to start prepping for #latitude36 from @EvergreenTurfAZ. We love watching these transformations! #naturalgrass #betterongrass @FieldExperts @TPIturfTalk



@JOSHUA_E_KELLEY

Orlando, FL February 15

This is the most ridiculous Irrigation work I have ever found. 14 couplers. At some point you gotta know to just replace the pipe. #golfcoursesuperintendent

Weed control lessons learned in 2018

// By JIM BROSNAN, PHD, GREG BREEDEN, AND JOSÉ J. VARGAS

Each year the turfgrass weed science program at the University of Tennessee conducts hundreds of research trials in the field, greenhouse, and laboratory. Despite having an array of different objectives, all of these trials have a singular focus: to help turfgrass managers with weed management issues. This article outlines key lessons learned in our program last year that will hopefully be of use to turfgrass managers in the coming season.

Lesson #1: explore weather data

Mother Nature certainly threw sports turf managers across Tennessee many curveballs in 2018. The year began with air temperatures measuring much higher than historical averages leading to spring emergence of warm-season turfgrasses (and weeds) occurring earlier than normal. Air temperatures fell in April, measuring nearly 10 degrees cooler (on average) than April 2017. Warming in 2018 (as measured by growing degree day accumulation) was higher than the previous two seasons and this period of warming continued into the fall.

Irregular weather patterns will not only affect the severity of weed infestations in warm- and cool-season turfgrasses but the efficacy of several herbicide treatments as well. That said, university Extension offices are here to help. Should field managers encounter oddities during the 2019 season, they are highly encouraged to contact their local Extension office for a breakdown of climatic conditions that may help explain the situation.

Lesson #2: know your *Poa*

One of the biggest lessons learned last year is that *Poa annua* populations across the state of Tennessee are very different from one another. Thanks to support



Photo courtesy of Jim Brosnan, PhD

from several golf course associations, our team is currently conducting a survey of *Poa annua* across Tennessee. Efforts have allowed us to study 72 different populations randomly selected during spring 2018 from facilities in East, Middle and West Tennessee that had either bermudagrass or zoysiagrass as a primary turfgrass species. Things we've learned studying these populations include:

- *Poa annua* from West Tennessee takes longer to germinate from seed than that found in Middle or East Tennessee. Moreover, populations from West Tennessee grow less vigorously from seed as well.
- Over 64% of the *Poa* collected in this survey has some level of resistance to glyphosate (e.g., Roundup).
- Over 58% of the *Poa* collected in this survey has some level of resistance to prodiamine (e.g., Barricade).

While we are still continuing to study these populations, implications of this research to turfgrass managers are significant, particularly in regards to herbicide selection. The current recommendation from University of Tennessee Extension is to target *Poa annua* infestations of warm-season turfgrass with a mixture of pre- and postemergence herbicides in October. This approach is an optimal resistance management strategy in that it facilitates using multiple modes of action for control. Additionally, delaying treatment until October increases the likelihood of turf remaining devoid of *Poa* throughout spring, compared to making a single application of a preemergence herbicide in late August or early September. Keep in mind that this recommendation does not factor in traffic stress from fall sports such as football and soccer and may need to be adjusted given field use patterns.

EDITOR'S NOTE: This article was originally published in *Tennessee Turfgrass* and has been slightly modified for publication here.



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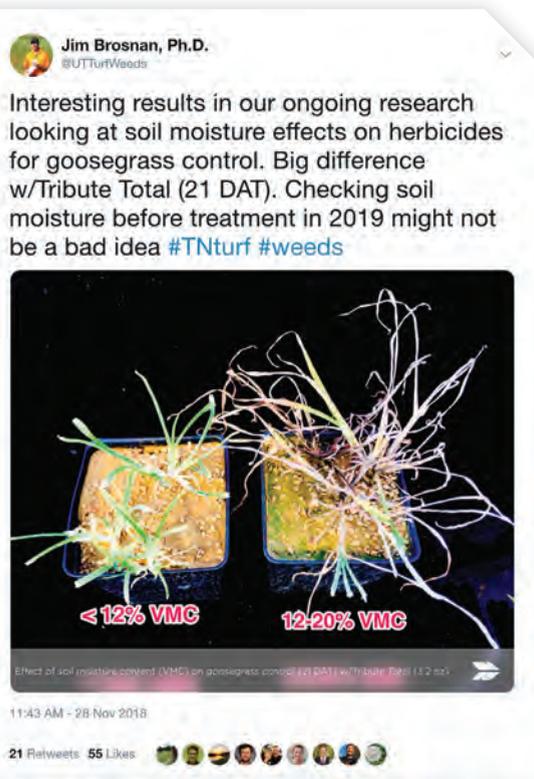
Lesson #3: soil moisture affects goosegrass control

Postemergence goosegrass control is a challenge every season. In 2018, we learned that the growing environment in which goosegrass is commonly found could be a reason why herbicide applications often struggle. We evaluated several different herbicides for postemergence goosegrass control in the greenhouse including Speedzone, Acclaim Extra, Tribute Total, Pylex, and Revolver. These treatments were applied to multi-tiller goosegrass maintained in soils varying in volumetric moisture content (VMC) from <12% to >20%. When applied at maximum labeled rates to plants growing in soils measuring <12% VMC, none of the herbicides tested controlled goosegrass greater than 25%. When soil moisture increased, goosegrass control increased dramatically as well. For example, Tribute Total only controlled goosegrass 20% when applied to plants growing in soil measuring <12% VMC compared to 93% when applied to plants growing in soil measuring >20% VMC.

To that end, we are recommending that sports turf managers measure soil moisture content before applying postemergence herbicides for goosegrass control in 2019. Use of a moisture meter can aid in determining if adequate soil moisture is present prior to treatment. It is important to remember that goosegrass needs time to acclimate to changes in soil moisture; simply applying irrigation prior to herbicide treatment likely will not improve efficacy.

Lesson #4: perennial weeds of high soil moisture continue to be an issue

Another takeaway from last year was that perennial weeds that prefer moist soils continue to be problematic. Weeds such as kyllinga, yellow nutsedge, purple nutsedge, Virginia buttonweed and doveweed continue to infest warm- and cool-season turfgrasses across Tennessee and beyond. As a result, many of the newest herbicides entering the turfgrass marketplace have



Tweet from Jim Brosnan, PhD

been developed with these weeds in mind including (but not limited to) Aethon, Celero, Dismiss NXT, GameOn, Relzar, SwitchBlade, and SurePower. Regardless of product, controlling these perennial weeds will likely require sequential applications in addition to improving the growing environment to favor turfgrass growth in lieu of weeds.

Lesson #5: programmatic thinking works

For the past several years our team has encouraged sports turf managers to implement weed control programs at their facilities, similar to what is done when managing turfgrass diseases. What is a weed control program? It is simply a well thought out strategy to maintain turfgrass as weed-free as possible from January through December. Weed control programs can incorporate different herbicide applications along with timely cultural practices to deliver an integrated approach to weed control. This proactive strategy is very different from the reactionary approach many take to controlling turfgrass weeds, i.e., seeing an

infestation and spraying the most readily available herbicide.

The 2018 season served as yet another reminder that weed control programs work very well and that there are many different ways to customize a program for a given facility. The proactive process of developing a weed control program offers key advantages including:

- Weeds are exposed to different herbicidal modes of action, either in rotation or mixtures with one another; doing so will therefore reduce selection pressure for resistant biotypes.
- Programs allow sports field managers to always improve their effectiveness in controlling weeds. The best turfgrass managers in our industry take notes throughout the season about weed management strategies that were (or were not) effective and can build programs based on this information. This process is very different than simply approaching the problem “the way it’s always been done” or making choices about weed management based on what herbicide is the most discounted in an early order program.
- Programs can be tailored to a specific location. For example, at multi-field complexes, different programs can be implemented to account for variations in growing environment. In lawn care, programs can be designed to be property specific, which makes a great deal of sense considering that no two lawns are the same.

For more information on turfgrass weed control, visit the University of Tennessee’s turfgrass weed science website, tnturfgrassweeds.org. Additionally, practitioners are encouraged to visit mobileweedmanual.com, a tool developed by University of Tennessee Extension professionals to assist green industry professionals in selecting herbicides for use in turf and ornamentals. **IST/**

By Jim Brosnan, PhD, is an associate professor at the University of Tennessee in Knoxville; Greg Breeden is an Extension specialist, and José J. Vargas is a research associate with the university’s Institute of Agriculture.

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Impact on soil from fraise mowing bermudagrass

// By RAYMOND K. MCCAULEY, GRADY L. MILLER, PHD, AND GARLAND D. PINNIX



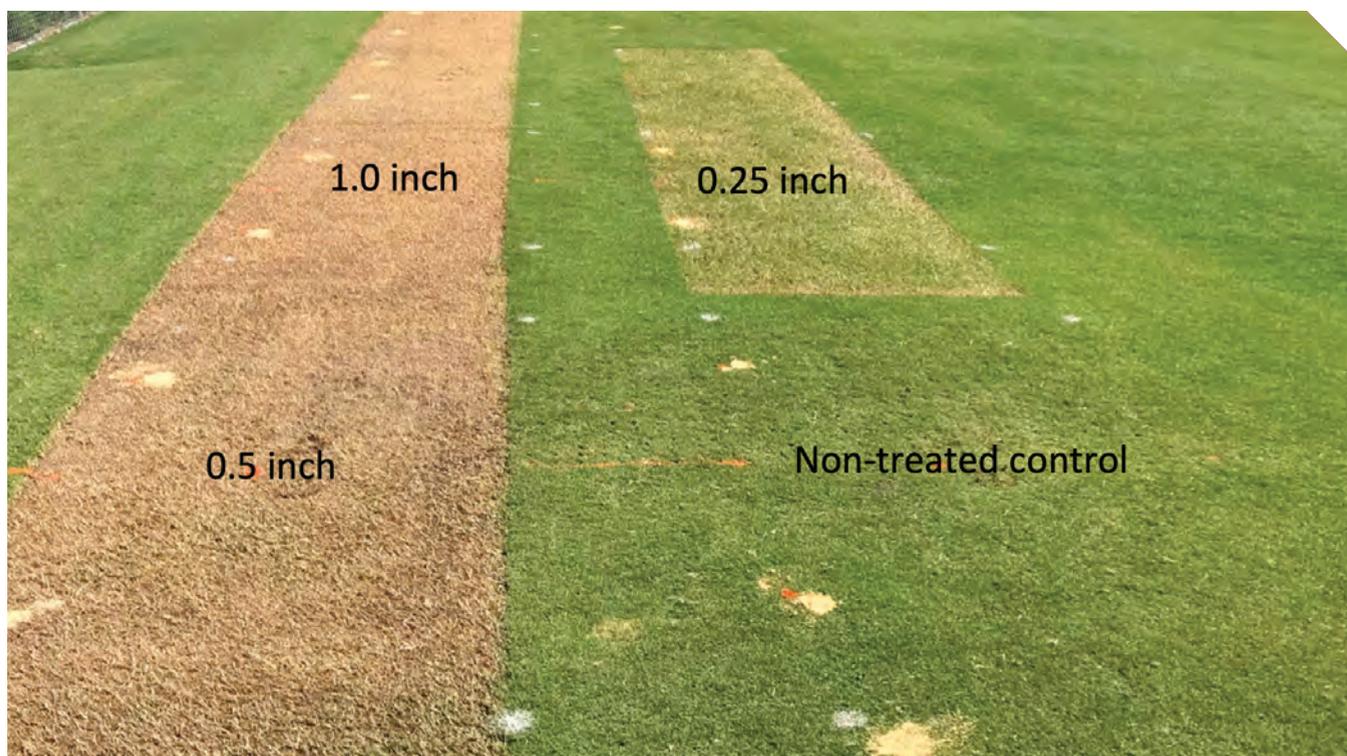
Fraise mowing on sand at 0.25 inch in mid-June: deep and intermediate treatment.

Excessive organic matter accumulation (>3 to 4% by weight) compromises soil aeration, drainage, turfgrass health, and playability. Aerification and vertical mowing are traditionally used to manage shallow organic matter. However neither of these practices impacts the entire playing surface. Fraise mowing is an aggressive cultural practice that impacts 100% of the playing surface and removes all plant and soil material up to a 2-inch depth. Although fraise mowing was originally devised to mechanically

control annual bluegrass in cool-season sports fields, the practice has gained acceptance for bermudagrass thatch management. Despite its growing popularity, fraise mowing research is limited, and its effect on soil physical properties has yet to be thoroughly explored. The objective of this research was to evaluate the effects of fraise mowing on the soil physical properties of two soils beneath established 'Tifway' hybrid bermudagrass.

Trials were conducted in 2016, 2017, and 2018 on a sandy loam soil (loam)

at NCSU's Lake Wheeler Turf Field Laboratory in Raleigh, NC and a sand capped soccer field (sand) in Cary, NC. Four fraise mow depths 0.25 inch (shallow); 0.5 inch (intermediate); 1.0 inch (deepest); and an untreated control (control) were applied in mid-June every year with a Koro Field TopMaker (FTM) 1200. Turf quality and percent cover were visually assessed weekly. Field hardness and stability were measured every 14 days. Water infiltration (ksat) and retention of the sand were also measured. Studies concluded in September every year.



Treatments on sand zero days after fraise mowing.

Impact on turfgrass quality and cover

Ideally, field conditions would return to an acceptable level as quickly as possible following fraise mowing. From a long-term perspective, fields should have better quality due to fraise mowing. In our studies, all fraise mowed treatments on both soils had unacceptable turfgrass quality and cover for various durations. Turfgrass cover decreased and recovery time increased with fraise mowing depth on both soils. On the loam, shallow, intermediate, and deep treatments had acceptable turf quality by 2, 4, and 5 weeks, respectively. In the non-treated turfgrass areas, turf quality and cover was unacceptable from 3 weeks after others were treated through mid-September as a result of excessive scalping. In 2017, recovery after fraise mowing was longer. Shallow treatments had acceptable turf quality at 4 weeks after treatment and intermediate and deep treatments were recovered at 6 weeks after treatment. In the non-treated areas turf quality and cover was acceptable on all dates except 4, 5, and 10 weeks after treatment (because of excessive scalping).

On the sand in 2016, shallow, intermediate, and deep treatments had acceptable turf quality by 2, 3, and 6 weeks after treatment, respectively. Non-treated areas maintained acceptable turf quality on all rating dates except 7 to 10 weeks after treatment. In 2017 on the sand, similar recovery times were observed after fraise mowing. Shallow and intermediate achieved acceptable turf quality at 3 weeks after treatment and deepest by 4 weeks after treatment.

Thatch removal with fraise mowing

At both locations and over both years, fraise mowing effectively decreased thatch levels of hybrid bermudagrass. Thatch content decreased with fraise mowing depth, and control treatments had twice the thatch content as the deepest treatment (8.3 vs 4.1 g, respectively).

Fraise mowing influenced field stability

On the loam in 2016, only the shallow treatment had higher shear values (a.k.a., greater field stability) than the control

and the difference between all treatments was small (<7 N m). However, in 2017, deep and intermediate treatments had the highest shear values (Table 1). Control and shallow treatments had lower tensile strength than the deepest and intermediate treatments. More thatch in the shallow and control treatments likely lowered their stability. Removing the thatch to engage more of the high cohesiveness of the underlying loam likely increased the stability of the deepest and intermediate treatments in 2017. On the sand in 2016 stability decreased with depth of fraise mowing treatment. The non-treated areas had the highest shear values (105 N m), shallow and intermediate had similar values and the deepest treatments had the lowest shear strength (76 N m). In 2017, the non-treated areas and shallow treatments had similar values which were higher than the intermediate and deepest treatments (~ 104 N m). The removal of reinforcing roots, stolons, and rhizomes and the poor cohesive strength of the sand rootzone likely resulted in the lower stability of the deepest and intermediate treatments.

Relationship with water infiltration (ksat)

It was not known if removal of the top organic layer would have a significant influence on water movement through a soil profile. Since both compacted soil and organic layers may impede water flow, we thought it may positively impact water movement. But our testing found that during both years intermediate and deepest treatments had slower water infiltration (ksat) rates than non-treated areas immediately after fraise mowing. The non-treated areas in 2017 had 200 to 400% higher ksat values than fraise mowed treatments on the day of fraise mowing. These reductions dissipated by 4 weeks after treatment in 2016 and 6 weeks after treatment in 2017. Similar reductions in ksat have been recorded following aerification due to hardpan formation. Like aerification, surface crusting from repeated passes of the fraise mower may have decreased ksat of the deepest treatment.

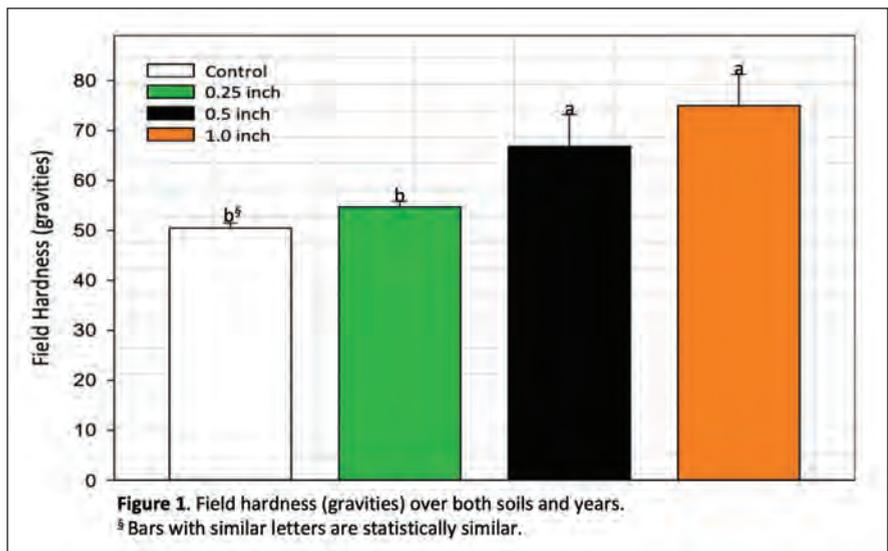
Field hardness

Over both soils the deep and intermediate treatments were harder than the non-treated areas and the shallow treatments. However, hardness values for the deep and intermediate treatments were within the appropriate range of 65 to 100 gravities for professional soccer fields, while those for the non-treated areas and the shallow treatments were not. This difference in firmness was attributed to less thatch and organic matter in the intermediate and deepest treatments. Similar results have been seen with previous fraise mowing studies.

During both years, fraise mowing changed the soil physical properties of both soils. In both soil types, thatch content decreased (positive response) while turfgrass quality decreased and field hardness increased (negative responses) after fraise mowing. In the sand, infiltration rate and soil stability decreased (negative responses). Because of the cohesiveness of the loam, stability increased (positive response) after fraise mowing. The removal of shallow organic matter likely increased field hardness (negative response) of both

Table 1. Stability (N m⁻¹) of fraise mowed treatments on loamy and sandy soils.

| TREATMENT | LOAM | | SAND | |
|-----------|-------|------|-------|-------|
| | 2016 | 2017 | 2016 | 2017 |
| | N m | | N m | |
| Control | 94.6 | 84.1 | 105.0 | 120.3 |
| 0.25 in | 101.3 | 80.3 | 97.7 | 116.0 |
| 0.5 in | 98.5 | 86.9 | 98.1 | 107.1 |
| 1.0 in | 98.9 | 96.2 | 76.7 | 104.7 |
| lsd | 5.4 | 5.7 | 6.6 | 4.5 |



soils. Despite the differences in soil physical properties and a general perception that more was negatively influenced than positively influenced, all fraise mowed surfaces had acceptable playability and significantly less thatch. Thatch reduction may supersede any temporary changes in soil physical properties. Additional soil physical properties were researched that were not presented in this article. These evaluations will be repeated in 2019 with the addition of a hollow tine aerification treatment structure.

We would like to thank Jimmy Simpson, CSFM, and the WakeMed Soccer Park Grounds Crew; Casey

Carrick, CSFM, and the UNC Athletic Dept Grounds Crew; Chad Price, CSFM, CFB, Carolina Green Corp., as well as Sam Green of Aqua-Aid North America for their contributions. This research was funded by the North Carolina Center for Turfgrass Environmental Research and Education. **/ST/**

Raymond K. McCauley is a graduate research assistant with the Department of Crop and Soil Sciences, North Carolina State University; Grady L. Miller, PhD, is professor of turfgrass science; and Garland D. Pinnix is a graduate research assistant in Raleigh. References available at www.sportsturfonline.com



JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL

////////

ANSWER ON PAGE 33

CAN YOU IDENTIFY THIS SPORTS TURF PROBLEM?

PROBLEM:

Brown area with green oval shapes in center

TURFGRASS AREA:

College intramural field

LOCATION:

Birmingham, Alabama

GRASS VARIETY:

Tifton 10 bermudagrass



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MID-ATLANTIC STMA CHAPTER NEEDS SUPPORT FOR BMP GUIDE

// By ERIC SCHRODER

After the Chapter Officer Training session at January's STMA Conference, Jason Bowers, CSFM, a sports turf supervisor from Maryland, stopped me to ask for our help in publicizing a new project the Mid-Atlantic STMA chapter had started. Jason said it is MASTMA's goal to create a comprehensive Best Management Practices (BMP) manual to help protect the sports turf management industry from unnecessary legislative barriers that might inhibit producing quality work. The chapter wants to inform the public about safety and have a more official response available to decision makers; other green industry factions are ahead of sports turf managers on this, he said.

Bowers said, "This started at the MASTMA 2018 when Dr. Frank Wong was giving a talk about pesticides. I work for Montgomery County Parks in Maryland. Back in 2014 or 15 the Montgomery County Council decided they were going to ban pesticides come 2020. Supporters of the bill specifically did not target agriculture or golf."

"Dr. Wong attended many the council meetings," Bowers said. "He tried to explain why proper pesticide applications are not harmful to environment, but no one listened. At the meeting I got with Dr. Wong and I explained to him who I was and where I worked, and I just wanted to know what happened in those County Council meetings. And he told me basically, landscape guys and sports turf guys were singled out.

"He said there weren't any sports turf managers or groundskeepers at any of the meetings, so landscape and sports turf got lumped into the band."

Bowers asked Dr. Wong what he or MASTMA could do to change things, but unfortunately, the damage was done in Montgomery County, though it's not too late for other locales. "Dr. Wong said one thing: write some BMPs so when there are more meetings at the county or even state



Jason Bowers, CSFM

level we have a document to show that we Sports Turf Managers are stewards of the environment," Bowers said.

One of the reasons why Montgomery County council members did not target golf was that superintendents have a history of being actively engaged on local issues and also had golf-specific, university-backed Best Management Practices (BMPs) to help defend themselves with. These BMPs were generated through GCSAA's national BMP initiative and serve as both a guide for golf courses to manage pesticide and fertilizer applications properly, but also to show the public how they were being stewards of the environment.

"Patrick Coakley overheard our discussion and stepped in to say, 'Let's get this ball rolling,'" he added. "Patrick reached out to Nicole Sherry, Dr. Wong, Hunter Swisher and me and we created the MASTMA outreach committee and started working on what we needed."

Coakley, a CSFM who works for DuraEdge, said, "Many of the frustrations I



Patrick Coakley, CSFM

have heard from sports turf managers come down to a very simple point: relevancy. We want to be seen as professionals. We want to be seen as the expert in our field. We want to be the ones our employers come to when they need answers. We want to be relevant.

"Many in our industry have been frustrated when our employer enlists the help of an outside 'expert' before we ever get a question. Maybe more credence is given to a brochure picked up at a tradeshow than the input of the person putting in the effort at the facility," he added. "And now legislators are now proposing laws, however well-intended, that are affecting the ability to do our jobs."

Dr. Wong told Coakley that BMPs show you have a plan, are making educated decisions, are already regulated and licensed and follow those laws.

"Looking deeper I realized that this document would contain many of the arguments that STMs make while venting at conferences. It says, 'here we are, we have always been here protecting the athlete,

More info on MASTMA's BMP initiative

From the MASTMA website:

Public and governmental perception is critical to our ability to continue to operate in the most efficient and effective manner possible. While other organizations have drafted and adopted a Best Management Practices manual, our Sports Turf Management Industry has not. As a result, we have become subject to pesticide bans, fertilizer restrictions, and a misinformed general public. Conversely, other factions of the "Green Industry" have been able to make themselves exempt from legislation due to their ability to present a researched-based and industry accepted approach as to why and how current practices already sufficiently address concerns stated in emerging legislation.

We need to do the same. It is MASTMA's goal to have a comprehensive Best Management Practices (BMP) manual in place to protect the Sports Turf Management Industry from unnecessary legislative barriers inhibiting us from producing quality work. Through a BMP, we will show that we are responsible licensed professionals who already abide by regulation and licensing for pesticides and fertilizer.

To accomplish this goal, we need your financial help. The MASTMA Board of Directors has committed \$1,000 to begin the process of creating the manual, so we have a solid start, but your help is greatly needed to ensure that we will accomplish our goal and make a difference to protect us all. Please consider donating what you feel is appropriate (MASTMA Members have been asked to consider a \$190 donation) to help cover the expense of providing a BMP manual.

Why is having a BMP so important and why should you care? Great question!

- A BMP will reinforce that we are educated and highly trained professionals that make decisions based on scientific fact and experience.

- A BMP will help counter proposed legislation that will limit what we can use to effectively and successfully perform our jobs.

- A BMP will recognize the Sports Turf Management Industry professionals as stewards of the environment by spelling out to organizations, communities, and state officials exactly how we operate in a clear transparent manner.

- A BMP will serve as the basis for how professionals conduct themselves in accordance with state/local regulations and a resource available for other STMA Chapters.

- A BMP will highlight industry specific practices that ensure the safety of the community and environment remains the top priority in our line of work. It is our hope the MASTMA BMP will become the template for other organizations and Sports Turf Managers nationwide.

Visit MASTMA.org and support our industry to ensure a successful future!

the environment and providing great fields. We are the experts and there is no need to look further," Coakley said. "I see this as a great opportunity. Why else would a local STMA chapter exist if not to get involved in this fight? We are a little late to the game but it's not too late. Time to get after it now."

"Patrick has done all the leg work in getting Stacey on board and talking with people to help write our letter," Bowers said. "I am just hoping this not only helps MSTMA but all Sports Turf Managers as a whole. They can use our manual as a reference for their state. After the manual is completed, we are talking about contacting the Mid-Atlantic Golf Course Superintendents and seeing if we could work together to go to the different political offices and show them both of our BMPs and explain to them that what we do does help the environment, and we are great environmental stewards for the Chesapeake Bay and the mid-Atlantic states."

As MASTMA puts together the pieces, it needs financial assistance; their goal is \$40,000. "MASTMA started the project with \$1,000 in seed money, and we are working with Stacey Kingsbury, a consultant who

"WE SPORTS TURF MANAGERS ARE STEWARDS OF THE ENVIRONMENT."

– Jason Bowers

has written BMP manuals for superintendent associations. This will be a 200+ page document with references and photos that will take more than a year to complete. We are asking for funds to pay for this as well as printing and distribution," said Bowers.

All contributions to the non-profit MASTMA are tax deductible.

Bowers said if individuals or groups can't donate money, perhaps they might consider telling peers or otherwise publicize this effort. "Sports turf managers need to know why this is important and how it might directly affect their futures. We need to spread the word so we can help protect jobs."

Where are the BMPs coming from?

Bowers and Coakley said they are using a superintendents group's BMP manual as a template. "Once we raise 25% of our goal, we will start writing. We will have sports turf managers from around our region contribute on certain subjects, such as infield skin care and synthetic turf; we will be asking several professors to edit sections as well as seeking contributions from some vendors."

The chapter's website says, "We have reached a critical time in our industry and need your financial help. While the technology and tools within our Sports Turf Management Industry are rapidly advancing, the critical protection of these practices is severely lacking. If we don't address and move to fill this need, we will begin to experience negative impacts that will greatly impact us where it matters most: our ability to perform our jobs to the professional standards expected by our employers and stakeholders." */ST/*

JEFF FOWLER

This month in “The SportsTurf Interview,” we meet Jeff Fowler, this year’s Harry C. Gill Memorial Founders Award from STMA. Recipients must exhibit dedication to the improvement of sports turf and outstanding ability and commitment to the sports turf industry, among other professional qualifications. Jeff is Senior Extension Educator-Horticulture for Penn State, based in Venango County in western PA. Fowler has been an extension educator for more than 30 years. He is on the board of directors of the Keystone Athletic Field Managers Organization and has been a board member of the national Sports Turf Managers Association.

Fowler also is known for his many years of service to the Little League World Series in Williamsport, where he annually organizes a group of 30-40 volunteers to help prepare and maintain the playing fields during the internationally televised event.

SportsTurf: Working in a university extension program you meet a lot of turf managers. What are they saying are the biggest obstacles to overcome for them to be successful today?

FOWLER: Remember I work with every level of field manager, from the volunteer at the local rec field to the highest level of athletics. The discussions I have with sports field managers that repeat themselves over and over are about money, human resources and cooperation/understanding of field users. Most of my clients/customers are volunteers that went to a meeting and someone found out they liked to mow, so they were put in charge of the fields. Budgets are made based on the amount of stuff donated to the concession stand, and on workdays the same two or three people show up. Certainly, this is different for higher levels of athletics but nonetheless many of the same struggles exist. The solution? It all comes down to communications, with parents, coaches, players, board of directors, GM’s, owners and staff! Communicate your wants, needs and desires to anyone that will listen.

ST: What advice would you offer managers at lower-budget facilities to make their fields safer?

FOWLER: Learn as much as you can about field care and then prioritize your spending. Network with other sports field

managers on social media, at field days, meetings, events sponsored by organizations about making fields safer. Ask questions, research answers and then figure out what needs done first. Some people say spread out your resources to improve all the fields. I have long been an advocate of putting your resources into a showcase field to allow people to see what you could do if you had more money and/or more resources. Make it shine and have people asking “hey, why don’t you do that to my field?” and be ready with a quick reply, “I can, but I need enough money and support to make it happen.”

ST: Please tell us about the roles you and your father have had in establishing the Little League World Series crew as a much sought-after volunteer position.

FOWLER: In 1994, Little League decided they wanted to renovate Lamade Stadium for the 50th LLWS. Dad (Don Fowler) had just retired after 32 years working for Penn State Extension. Little League reached out to a newly formed group, the Keystone Athletic Field Managers Organization, to see if they would lend support to what was a monumental renovation at the time. Alpine Services Inc. (Grove Teats) had been hired to redo the stadium. Dad volunteered to go be the “clerk of the works” for Little League. After the renovation they didn’t know what to do with this “gem” of a field, so Dad put



“I have long been an advocate of putting your resources into a showcase field to allow people to see what you could do if you had more money and/or more resources,” says Jeff Fowler.

together a fertility and maintenance plan, and then he was asked to put together a few helpers to prepare the field for the LLWS that year, and thus the beginning! My first year would be 2 years later. The event became bigger and more popular on TV, and went from 8 teams to 16 teams and from one week to two.

The need for crew outgrew the handwritten invites that dad would send. He asked me if I could type out a letter and keep a mailing list on my computer. After all I had an apple 2E in my office that used 5.5-inch floppy disks! After a few years of my writing that letter and printing it on a dot matrix printer and shipping it to him to sign and send, he said “Jeff why don’t you just take care of this from now on!” Since that time, we have more than 100 people in the database from 21 states that have come to help.

ST: Is there a favorite on-field maintenance task that you enjoy performing at LLWS?

FOWLER: While not field maintenance tasks, there are two on field events that I don't like to miss. Opening Ceremonies, when all 16 teams are still winless and the coaches, players, umpires and fans see the fields for the first time all polished up and ready for televised play. But more special to me is the early morning of the second Saturday of the series. That's when the crew and I move from the TV cameras of network television on Lamade stadium to prep the field for a game on Volunteer Stadium. This game has two teams from across the globe participating in the Challenger Division. A game just like the tournament, to show off their talents, in front of a stadium full of excited fans! The Little League Challenger Division gives special needs youth the opportunity to play baseball. If you haven't ever seen or been a part of something like this, I would encourage you to find an organization in your community that offers such a program. It's truly humbling.



Three generations on Fowlers in 2014 at the home of the Little League World Series in South Williamsport, PA: Jeff, his son, Evan, and father, Don.

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

FOWLER: Think about where we were 10 years ago and multiple the change by ten! Technology has and will continue to lead the way, making us better and more efficient at what we do. The demand on field usage will increase and we need to position our fields to be ready to meet that demand. We need to continue to work hard to increase salaries and work even harder at reducing work hours for our industry. We can't continue to have people working 100 work weeks for little to no pay and expect them to stay in the game.

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

FOWLER: I certainly feel I have received more benefit than I have

given to the association. I have a 2700 + person network of STMA members that I call friends from all over the world. Each of them has the same passion, providing safe playing surfaces for athletes and in many cases on limited budgets that are made up of registration fees, donations and hot dog sales! People that would rather look at your "shop" than watch the game. People that hate rain on game days but pray for it when the team is out of town. People that share their solutions and their failures. People that want to be "Experts on the Field and A Partner in the Game." These friends are the very things that have made my career so very enjoyable.

ST: How do you think the natural turf vs. synthetic turf issue will play out over the next decade?

FOWLER: There are many readers sitting on the edge of their seats waiting for the @Trfguy to answer this one. I have met with thousands of field managers over the course of my career, and I am yet to meet one that doesn't have a passionate answer to the synthetic vs. natural question.

Why can't we have room for both in this discussion? Both play a valuable role in our success. I have visited places that don't have space except for a field that serves ALL sports, practices, and school activities and is open for public use from sun up until someone turns off the lights at night. I have visited fields that are under maintained and over used. I have seen fields being used in seasons that we have no business even being played on! If you don't believe me, look at the lacrosse schedule for the BIG 10. On the other side of the coin, I have seen even more natural grass surfaces that tolerate wear, over use, and still look and play incredibly well. In my humble opinion it comes down to the priorities of

the users. I have seen towns, schools and universities that don't budget \$10,000 for seed and fertilizer suddenly find \$750,000 dollars to put in a new synthetic surface. @Trfguy scratches his head a lot!

I do believe that more research on traction, lower extremity injuries, concussions and larger health issues will help us in the future. I believe this research will bring the picture more into focus.

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

FOWLER: You should probably ask my wife this question! When I am not at work, golf, home improvement projects, kayaking, bike riding, and travelling take up my time. Oh yeah I almost forgot, I love working on our local Little League fields! /ST/

Skin cancer

According to the American Academy of Dermatology, skin cancer is the most common cancer in the US; current estimates are that one in five Americans will develop skin cancer in their lifetime. Nonmelanoma skin cancer (NMSC), including basal cell carcinoma and squamous cell carcinoma, affects more than 3 million Americans a year. Women's incidence rates are increasing for both types of NMSC, as are those for people younger than 40.

The number of these cancers has been increasing for many years. This is probably from a combination of better skin cancer detection, people getting more sun exposure, and people living longer.

Caucasians and men older than 50 have a higher risk of developing melanoma than the general population, but skin cancer can affect anyone, regardless of skin color.

The 5-year survival rate for people whose melanoma is detected and treated before it spreads to the lymph nodes is 99%. Still, nearly 20 Americans die from melanoma every day.

According to one estimate, about 5.4 million basal and squamous cell skin cancers are diagnosed each year, and about 80% of these are basal cell cancers. Squamous cell cancers occur less often.

An estimated 2,000 people in the US die each year from these cancers. Most people who die from these cancers are elderly and may not have seen a doctor until the cancer had already grown quite large. Other people more likely to die of these cancers are those whose immune system is suppressed.

Risk factors

Exposure to natural and artificial ultraviolet light is a risk factor for all types of skin cancer. The majority of melanoma

cases are attributable to UV exposure.

Increasing intermittent sun exposure in childhood and during one's lifetime is associated with an increased risk of squamous cell carcinoma, basal cell carcinoma and melanoma. Even one blistering sunburn during childhood or adolescence can nearly double a person's chance of developing melanoma. Experiencing five or more blistering sunburns between ages 15 and 20 increases one's melanoma risk by 80% and nonmelanoma skin cancer risk by 68%.

Exposure to tanning beds increases the risk of melanoma, especially in women 45 and younger.

Risk factors for all types of skin cancer include skin that burns easily; blond or red hair; a history of excessive sun exposure, including sunburns; tanning bed use; a weakened immune system; and a history of skin cancer.

People with more than 50 moles, atypical moles or large moles are at an increased risk of developing melanoma, as are sun-sensitive individuals (e.g., those who sunburn easily, or have natural blond or red hair) and those with a personal or family history of melanoma.

Men and women with a history of nonmelanoma skin cancer are at a higher risk of developing melanoma than people without a nonmelanoma skin cancer history.



Root basal cell carcinoma [all images courtesy of American Academy of Dermatology]



Root squamous cell carcinoma

Women with a history of nonmelanoma skin cancer are at a higher risk of developing leukemia, breast, kidney and lung cancers, and men with a history of nonmelanoma skin cancer are at a higher risk of developing prostate cancer.

Types of skin cancer

Actinic Keratoses (AK) are dry, scaly patches or spots and are precancerous growths. People who get AKs usually have

EDITOR'S NOTE: Following the reaction to Jeff Salmond's article in the January issue where he details his brush with mortality due to an undetected heart issue, we are beginning this "Personal Rootzone" series to call attention to personal health issues. Thanks to the American Academy of Dermatology for their assistance.



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fair skin. Most people see their first AKs after 40 years of age because AKs tend to develop after years of sun exposure.

AKs usually form on the skin that gets lots of sun exposure, such as the head, neck, hands, and forearms. Because an AK can progress to a type of skin cancer called squamous cell carcinoma (SCC), treatment is important.

Basal cell carcinoma (BCC) is the most common type of skin cancer. BCCs frequently develop in people who have fair skin, yet they can occur in people with darker skin.

BCCs look like a flesh-colored, pearl-like bump or a pinkish patch of skin.

BCCs are common on the head, neck, and arms, yet can form anywhere on the body, including the chest, abdomen, and legs.

Early diagnosis and treatment for BCC is important. BCC can invade the surrounding tissue and grow into the nerves and bones, causing damage and disfigurement.

Squamous cell carcinoma (SCC) is the second most common type of skin cancer.



Melanoma

HOW TO APPLY SUNSCREEN

Sunscreen is safe and can protect your skin against skin cancer and premature aging. However, it is not as effective unless it's applied correctly.

- Choose a sunscreen that has an SPF of 30 or higher, is water resistant, and provides broad-spectrum coverage, which means it protects you from UVA and UVB rays.

- Apply sunscreen generously before going outdoors. It takes approximately 15 minutes for your skin to absorb the sunscreen and protect you. If you wait until you are in the sun to apply sunscreen, your skin is unprotected and can burn.

- Apply enough sunscreen to cover all exposed skin. Most adults need about 1 ounce (think shot glass) to fully cover their body. Rub the sunscreen thoroughly into your skin.

- Remember your neck, face, ears, tops of your feet and legs. If you have thinning hair, either apply sunscreen to your scalp or wear a wide-brimmed hat. To protect your lips, apply a lip balm with a SPF of at least 15.

- To remain protected when outdoors, reapply sunscreen every two hours, or immediately after swimming or sweating. People who get sunburned usually didn't use enough sunscreen, didn't reapply it after being in the sun, or used an expired product. Your skin is exposed to the sun's harmful UV rays every time you go outside, even on cloudy days and in the winter.

People who get sunburned usually didn't use enough sunscreen, didn't reapply it after being in the sun, or used an expired product. Your skin is exposed to the sun's harmful UV rays every time you go outside, even on cloudy days and in the winter. So whether you are on vacation or taking a brisk fall walk in your neighborhood, remember to use sunscreen.

DETECT Skin Cancer: Body Mole Map

Follow these instructions regularly to conduct thorough skin exams: **1.** Learn what to look for. **2.** Examine your skin. **3.** Record your spots. If you notice any new or changing spots, contact your dermatologist to make an appointment. If you don't have one, visit aad.org/findaderm to find a board-certified dermatologist in your area.

1 The ABCDEs of Melanoma

What to Look for:

Melanoma is the deadliest form of skin cancer. However, when detected early, melanoma is highly treatable. You can identify the warning signs of melanoma by looking for the following:

- A ASYMMETRY** One half unlike the other half.
- B BORDER** Irregular, scalloped or poorly defined border.
- C COLOR** Varied from one area to another; shades of tan and brown, black, sometimes white, red or blue.
- D DIAMETER** While melanomas are usually greater than one (the size of a pencil eraser) when diagnosed, they can be smaller. Use the ruler below for a guide.
- E EVOLVING** A mole or skin lesion that looks different from the rest or is changing in size, shape or color.

Example:

2 Skin Cancer Self-Examination

How to Check Your Spots:

Checking your skin means taking note of all the spots on your body, from moles to freckles to age spots. Skin cancer can develop anywhere on the skin and is one of the few cancers you can usually see on your skin. Ask someone to help when checking your skin, especially in hard-to-see places.

- Examine body front and back in mirror, especially legs.
- Stand in front; look carefully at forearms, back of upper arms, and palms.
- Look at feet; spaces between toes and soles.
- Examine back of neck and scalp with a hand mirror. Part hair and lift.
- Finally, check back and buttocks with a hand mirror.

3 Record Your Spots

Make notes of your spots on the images below so you can regularly track changes.

| MOLE # | A Asymmetrical? Shape of Mole | B Type of Border? | C Color of Mole | D Diameter/Size of Mole. Use ruler provided. | E How has mole changed? |
|--------|-------------------------------|-------------------|-----------------|--|-------------------------|
| 1 | OVAL, EYER | JAGGED | PINK | 1.5MM | YES, LARGER |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Name: _____ Date: _____

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Melanoma

People who have light skin are most likely to develop SCC, yet they can develop in darker-skinned people. SCC often looks like a red firm bump, scaly patch, or a sore that heals and then re-opens. SCC tend to form on skin that gets frequent sun exposure, such as the rim of the ear, face, neck, arms, chest, and back. SCC can grow deep in the skin and cause damage and disfigurement. Early diagnosis and treatment can prevent this and stop SCC from spreading to other areas of the body.

Melanoma is the deadliest form of skin cancer. It frequently develops in a mole or suddenly appears as a new dark spot on the skin. Early diagnosis and treatment are crucial.

Prevention

Seek shade when appropriate, remembering that the sun's rays are strongest between 10 am and 2 pm. If your shadow is shorter than you are, seek shade.

Wear protective clothing, such as a lightweight long-sleeved shirt, pants, a wide-brimmed hat and sunglasses, when possible.

Generously apply a broad-spectrum, water-resistant sunscreen with an SPF of 30 or higher. Broad-spectrum sunscreen provides protection from both UVA and UVB rays. Reapply sunscreen every 2 hours, or after sweating.

Use extra caution near water, snow and sand, as they reflect the damaging rays of the sun, which can increase your chance of sunburn.

Avoid tanning beds. Ultraviolet light from tanning beds can cause skin cancer and premature skin aging.

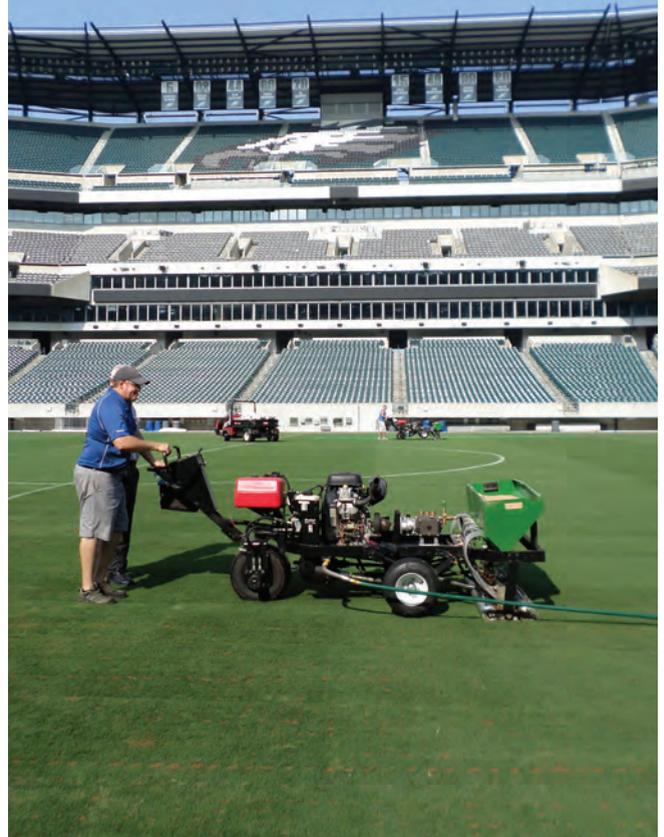
Consider using a self-tanning product if you want to look tan, but continue to use sunscreen with it.

Perform regular skin self-exams to detect skin cancer early, when it's most treatable, and see a board-certified dermatologist if you notice new or suspicious spots on your skin, or anything changing, itching or bleeding. **/ST/**

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Winter Survival, drainage and turfgrass nutrition

// By GORDON KAUFFMAN III, PHD



Wait until the optimum time to establish turfgrass in the spring, after the final expected frost date for your region and choose the correct species and/or cultivar for maximum long-term benefit. (photos courtesy Gordon Kauffman III, PhD)

Given the excessive rainfall in the northeastern US last year and the continued snow, rain and sleet this winter, the timing seems appropriate to develop a checklist for spring. “This too shall pass,” a wise person once told me. With warmer weather around the corner, turf managers must quickly evaluate the extent of plant survival after snow and ice melt. What was status last fall and leading up to dormancy, and how might this year’s winter weather affect the

potential for turf loss? Here are ways to determine the extent of winter damage, options to improve drainage so fields can handle more water, what to do when it inevitably gets hot and dry, and identify when and why sports turf managers most often fertilize.

Don’t wait to get in the field and determine the extent of turf injury and/or loss. Check problem areas first, including low lying, poorly drained, heavily trafficked, compacted, and/or

those that were established the previous fall. If an area looks lost, cut out a core and bring it inside to determine how much crown tissue and stolons remain viable. It may take a couple of weeks to see the extent of the damage. In areas that incurred turf loss, prepare to renovate or inter-seed. Avoid seeding too early however; depending upon you location, it’s possible for winter weather to reoccur, setting back immature plants. Consider turf selection very carefully

during establishment. This provides an opportunity to incorporate desirable species and cultivars going forward. Prioritize the most important turfgrass traits for your site and use, for example texture, wear tolerance, cold tolerance, or shoot density.

Improve drainage

As temperatures warm, any renovation has occurred, you've smelled cut grass, and the first fertilizer has been applied, consider where and how to improve drainage. Focus on soil physical properties that affect soil air/water ratios, and the structure that provides stability, drainage and anchorage for plants. For fields on heavier soils, it's important to maximize drainage for improved turfgrass vigor, including rooting, but also to promote better surface characteristics, less compaction, and improved traffic tolerance. Recall that soil *texture* influences drainage, extent of compaction, and firmness (all important factors for playability) but it also affects nutrient holding capacity and thus the effectiveness of turf nutrition programs. Soil compaction remains a function of both soil texture and moisture. Most compaction occurs at the surface and can lead to internal drainage problems if not corrected. Choose options to improve water infiltration and hydraulic conductivity based on the extent of the problem, resources, and budget.

Aeration replaces soil oxygen with atmospheric oxygen for plant root and microorganism consumption and provides additional exchange of carbon dioxide to the atmosphere. Aerate using hollow coring, solid deep tine, hydroject and aggressive vertical mowing. Core aeration produces macro channels, allowing better movement through the soil profile. These channels may be filled with sand to amend the soil and further improve percolation. Routine and continued aeration also reduce thatch, minimize compaction, and offer better plant rooting long term.

Broadcast sand for general maintenance and fill hollow tine coring holes with sand to dilute soil organic

**“CORE AERATION
PRODUCES MACRO
CHANNELS, ALLOWING
BETTER MOVEMENT
THROUGH THE
SOIL PROFILE.”**

matter and thatch. Routine sand topdressing applications firm the playing surface, minimize devoting potential, and reduce compaction. Recall that sand particles do not compact like silt and clay, therefore modifying the rootzone with sand over time will offer better overall hydraulics and reduce standing water. Sand topdressing can be expensive, both the sand and the labor to apply it, however it offers many benefits so figure out a way to incorporate this key cultural practice into your management plans.

What to do when it's hot and dry

So you've dealt with the spring checklist and improved drainage, now guess what? Of course it's going to get hot and dry, right? Here are some considerations for summer because, as we all know, the fields will continue to see play throughout environmental stress.

Focus on rooting. Plants with deeper, more fibrous roots systems will acquire limited soil available water. Turf species and time of year largely determines the extent of the root system, however you can encourage rooting by applying moderate doses of soluble nitrogen (N) at the correct time, aeration, spiking, vertical mowing, and judicious irrigation. Do not over apply N; shoot growth at the expense of root growth, particularly in the late spring for cool season turf, will negatively affect turf vigor and stress tolerance because carbohydrate reserves can become depleted.

Do you have access to irrigation or rely on natural rainfall? If you irrigate, how is the water quality? If you are fortunate enough have to ability to control water inputs, you have the advantage to control soil moisture and speed establishment by supporting microbial activity and nutrient release.



Expanded root architecture, including depth and surface area will offer a turfgrass community better drought tolerance and survival. (photo courtesy John Kaminski)



The use of hand watering offers turf managers ability to control water inputs, the option to provide evaporative cooling and further fine-tune soil moisture.

Do not overwater. If feasible, hand watering offers more control and the option to syringe. Assess turf vigor by how it responds to a fertilizer application and/or recovers from mechanical stress, lack of water, and/or divoting. Reduce soluble N during drought stress. Ensure optimum tissue potassium (K) 2-3% to further increase drought stress tolerance. Finally, consider spraying known

osmotic adjusting amino acids such as proline and glycine-betaine. These normally come as part of a nutrient formulation and should be applied preventatively, prior to water deficit. These osmotic adjusters, or compatible osmolytes, work at the cellular level to improve plant water status.

Wetting agents and surfactants will promote water infiltration and/or

uniform movement of the applied water. Use on sites where water does not easily penetrate the soil surface or on sand based systems where hydrophobicity/water repellency has resulted in localized dry spots. Surfactant chemistries differ in their mode of action and application for use and have the potential to cause phytotoxicity, so always read labels and apply for the appropriate reason.

WEAR TOLERANCE TESTING

In 2017, BRANDT worked with Dr. Gerald Henry at the University of Georgia to develop and test nutrient and soil conditioning programs designed to improve soil physical properties and increase turfgrass wear tolerance. We evaluated a rotational program of liquid fertilizers, including BRANDT iHammer's Upplause® Plus (10-0-0) and two of BRANDT's premier GRIGG brand specialty soil fertilizers: GRIGG™ Rhizonify™ (6-4-4 + minors) and GRIGG Bio Blend™ (10-0-0 5Ca). This rotational program improved turfgrass quality, including increased soil volumetric water content. The program also significantly increased Tiftway '419' Bermudagrass shear strength compared to the nutrient and untreated controls. These formulations provide nutrients for turf color and tillering, and the organics to improve the physical properties of the soil. The efficacy and delivery of these are further enhanced by the anionic surfactant that ensures uniform delivery to the soil profile.



Apply minor nutrients for better color without excess shoot growth and increase mowing height leading up to and during water deficit conditions.

Nutrient management

For general maintenance, you should apply complete and balanced nutrient formulations. *Focus on N application timing and dose.* Deliver more soluble N when plants are actively growing – spring and fall for cool season turfgrass species and summer for warm season turfgrasses.

Before feeding the grass, calibrate the spreader or sprayer to ensure optimum delivery without waste. Without calibration, you run the risk of over or under-applying nutrient, which can compromise plant growth and development, risk environmental contamination, and waste money. Some fertilizer products contain pesticides, increasing the requirement for calibration.

Let's face it, sports fields get beat up. They often host multiple sports throughout the growing season and during adverse environmental conditions. As a result, managers have little opportunity to promote turfgrass recovery. To maintain field uniformity, seed must be continuously introduced in hopes that plants survive with vigor. How do you provide the best chance for survival?

- Choose the correct turf species
- Provide a seedbed/limit compaction
- Irrigate, if possible
- Fertilize; focus on slow release N throughout the season to ensure adequate soil N and supplement with soluble N after seedlings have emerged and reached the 4-5-tiller stage.

When a lull in the schedule does exist, be prepared to implement a recovery program. Increase the height of cut and target soluble and insoluble N inputs; however, limit urea applications to permeable surfaces to reduce leaching losses. Focus on phosphorus (P) and minor nutrients to maximize energy production and photosynthesis. Discontinue the use

of plant growth regulators. Soluble N will encourage rooting, tillering and stolon/rhizome growth, while the insoluble N mineralizes slowly, releasing plant available N over an extended period of time; thus enhancing turfgrass vigor longer term.

In the spring, do not try to push bermudagrass with heavy doses of soluble N, which can have a dramatic negative affect if you encounter extreme cold in late March or April. Apply more foliar micronutrients and Mg in the spring and fall when the sun angle is lower to maximize photosynthesis. Raise the height of cut going into winter. Maintain a balanced fertilization program in the fall and limit N fertilization.

For cool season turf, supply low doses of soluble N (≤ 0.25 lbs./1000 ft²) in the mid-fall to increase carbohydrate storage in the roots and increase winter hardiness. Limit high rates of potassium (K) (>1 lb. K/1000 ft²) prior to winter for warm and cool-season turfgrasses.

Many factors influence turfgrass N requirements. Warm season grasses, in general, require higher nutrient inputs than

cool season grasses used for sports turf. More specifically, Kentucky bluegrass often requires much higher nutrient inputs, specifically N, compared to perennial ryegrass in the first couple of years, until fully established. Soil physical properties and organic matter also affect plant requirements. For example, compacted soils will require higher N rates than non-compacted, better draining, soils.

Fortunately, turf managers have technologically advanced fertilizer options – from slow release granule formulations that can be applied at higher rates, to liquid, or foliar, options generally applied frequently and in low doses. The latter, referred to as 'spoon feeding', allows turf managers the ability to 'meter' nutrient inputs. Foliar fertilizers' effects are more pronounced on sand soils, during environmental stress, or when root growth is compromised.

Concepts of Best Fertilizer Management

Beyond understanding the broad plant/soil community and collecting soil test data, best fertilizer management (BFM) includes selecting the correct fertilizer and applying it at the correct time. The concepts focus on fertilizer use and fate with the goal to maximize plant use of nutrient and minimize loss to the environment. BFM *requires* an integrated approach and using all available options. Most fertilizer programs start with N because plants require it in the highest amounts, and it should be the focus of a successful program. Maximize efficiency and minimize environmental losses by supplementing soil targeted slow release fertilizer applications with low dose and soluble foliar nutrition and, as always, become a keen observer and trust what you see! **IST/**

Gordon Kauffman III, PhD, is turf and ornamental technical manager for BRANDT, visit www.brandt.co or www.grigg.co.

TAKING CHARGE

The rapid rise of battery-powered outdoor power equipment

// By JOHN KMITTA

During the past several years, the outdoor power equipment (OPE) industry has seen a dramatic surge in the amount of battery-powered OPE in the market. Industry experts agree that battery-powered OPE is one of the hottest “trends” in the industry, and that trend does not appear to be slowing down anytime soon. Not only has the battery-powered handheld equipment market taken off, but battery-powered ride-on equipment – including ride-on and stand-on zero-turn mowers – is now available with commercial-quality runtime.

What has driven this technological shift? Where will advancements in battery power take us next? And what does it all mean for the future of the OPE industry?

Charging ahead

According to Josh Huffman, business segment director, outdoor power equipment, Oregon, a Blount International brand, a big reason for the rise of battery-powered OPE is the continued growth of the capacity-to-current ratio curve of lithium-ion cells.

“More available current (amps or power) with higher capacity (amp hours or runtime) cells results in a tool that is more likely to please the customer,” said Huffman. “It’s one thing when you’re talking about a 18V drill – we reached that power/capacity point years ago – but now, when you’re talking about a lawnmower or a chain saw, you’re talking about serious power needs and a customer demand for long runtimes.

Huffman added that as the electric automobile market pushes the envelope on power systems, battery capacity, production, new technologies and technical

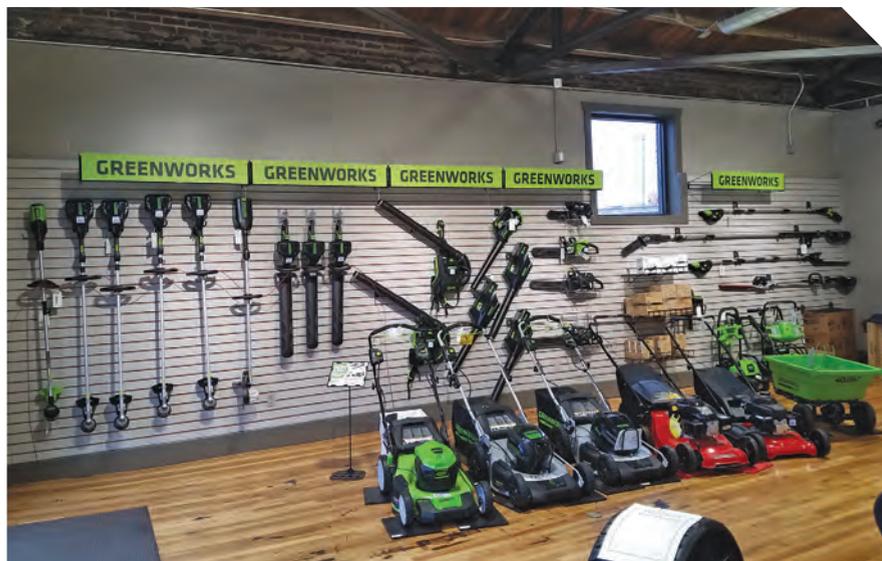


Photo provided by Greenworks Commercial

advancements, the OPE market benefits.

Chris Urlaub, associate marketing manager, portable power at Toro, added that advancements in lithium-ion battery technology have helped alleviate consumers’ concerns that battery-powered products will have enough power and runtime for their needs.

“This combination of more power, more runtime, and consumers’ increasing desire for a convenient alternative to gas has resulted in a dramatic increase in battery-powered outdoor power equipment over the last several years,” said Urlaub.

According to Tony Marchese, director of independent retail for Greenworks North America, another reason for the rise of battery-powered equipment is that municipalities are driving the need for landscapers to purchase battery-powered products. “There are now more than 500

cities with some sort of ban of 2-stroke or 4-stroke engines,” said Marchese. He added that the market is also being driven by the desire of corporate America to go “green” with companies such as Coca-Cola, Google and Apple demanding that their landscapers use “green” or rechargeable products to maintain their corporate landscapes.

Christian Johnsson, North American product manager for handheld products at Husqvarna, said that, as a global company, Husqvarna has seen a far greater demand for battery-powered outdoor power equipment in Europe, because the price of gasoline is higher in Europe, and because municipalities, cities and countries are banning gas-powered products to cut down on noise pollution and emissions. Similar bans in California and in some northeastern states are beginning to drive users to battery-powered equipment in the U.S.

EDITOR’S NOTE: The following is excerpted from an article that originally appeared in the February issue of *Outdoor Power Equipment* magazine, sister publication to *SportsTurf*.

Johnson said there are landscapers and arborists who have become early adopters of battery-powered equipment, and have been willing to shift to battery. As a result, they have leverage over competitors in their area who aren't using battery because they can start earlier, work later, and work closer to schools and hospitals due to the reduced noise. Contractors using battery-powered equipment can also promote the fact that they are cutting down on noise pollution and emissions, and, as a result, position their businesses as environmentally friendly, and, in turn, charge more for their services.

Marchese added that, on the consumer side, Loews, Home Depot and Amazon are driving their customers to battery-powered outdoor power equipment, because it cuts down on the number of product returns.

Advancements in battery technology

"Battery technology has advanced, and continues to advance to the level where tools can perform on the level of certain gas tools," said Mike Poluka, handheld battery equipment product manager at Stihl Inc. "Batteries continue to increase in capacity, and the benefit there is longer runtime – sometimes with little to no weight increase."

According to Andrew Lentz, group product manager, Milwaukee Tool, similar to how the power tool industry saw battery equipment catch up to corded power tools, advancements in overall system architecture have helped drive the rise of battery-powered OPE.

"Over the last 10 years, just from a battery perspective, we have batteries delivering four to five times more capacity than 8 to 10 years ago," Lentz added. "That has come a tremendously long way."

"When we started developing commercial electric mowers almost 10 years ago, the best battery source was lead acid batteries," said Joe Conrad, president of Mean Green Mowers. "Lead acid batteries made our mowers very heavy and would still only last a few hours before needing to be recharged or swapped out."

According to Conrad, lithium batteries have allowed much better runtime and much less weight than lead acid technology.



Photo provided by Milwaukee Tool

"With the greater acceptance of electric cars over the past few years, more lithium battery manufacturers have greatly increased automation, and applied new chemistry to their production lines," said Conrad. "Ten years ago, our 720-pound

lead acid battery pack would run about two hours on our 60-inch ZTR mower. Today, our 340-pound Green Lithium battery pack will give us up to seven hours of continuous runtime."

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Turfco's founding family celebrates 100 years

Being in the same industry for 100 years is an achievement few family businesses can claim. From their grandfather who started National Mower Company in 1919, to the third generation Kinkead executives who run Turfco today, the Kinkead/Turfco 'family' recognizes the privilege of being part of an industry where everyone loves what they do. Now at the century mark, the Kinkeads and Turfco want to express their gratitude for all the support, collaboration and partnership that the company has received from turf industry professionals over the 10 decades.

"Turfco just wants to say 'thank you, turf industries,' for all the great time spent together working to solve challenges and grow these great industries," said George and Scott Kinkead, president and executive vice president, respectively, of Turfco Manufacturing, Blaine, MN.

Topdresser giveaway

To celebrate this milestone, the company has launched a "100 Years of Thanks" giveaway for customers featuring a Turfco WideSpin 1550 broadcast topdresser as the grand prize. Five GoPro HERO7 Silver cameras will also be awarded. From now until September 30, sports turf professionals, golf course superintendents, and assistant superintendents can enter online at www.turfco.com/100years.

Drawings for the five GoPro cameras will be held on specific dates during the promotion, so early entrants will have a greater chance of winning. The grand prize WideSpin 1550 topdresser will be awarded in the fall.

"Scott and I have spent our whole careers in this industry, and these are tangible ways to express our heartfelt gratitude for the opportunities and collaborative partnerships we've experienced working with so many great professionals," said George.

In honor of their centennial, Turfco also made a \$25,000 contribution to GCSAA's Environmental Institute for Golf foundation to fund turf research.



Scott Kinkead, left, and his brother George are 3rd generation Turfco executives.



The family's lineage as makers of turf care equipment dates back to 1919.

Hitched to horses

The family's lineage as makers of turf care equipment dates back to 1919. World War I had recently ended when Robert Stanard Kinkead, a veteran, founded National Mower Company, based in St. Paul, MN. He started off making reel-type, sickle bar and pull-behind lawn mowers that could be hitched to horses or tractors. Robert was an engineer during the war and he noticed sickle-bar equipment while overseas.

Fast forward to 1961 when Turfco, working closely with local superintendents, created the first mechanized topdresser, which made putting down product faster, easier and more consistently. John Kinkead Sr., while still working at National Mower,

spearheaded the introduction of many other turf innovations at Turfco.

In the early years, John Kinkead would pack up the family station wagon with a disassembled mower, and travel to demonstrate the product to prospects over 6-week periods at a time, gaining input along the way. He had to reassemble the mower at each stop.

For sons George and Scott life on the road was made easier as they could pack Turfco equipment for demonstration on a 20-foot trailer, greatly improving their on-the-road productivity.

Both George and Scott were rooted in the turf industry from their early youth, working summers at the manufacturing plant or at a golf course and learning the business almost by osmosis. As they picked up on various aspects of the business, they were surprised to find out that the UTVs they raced around with at the family's rustic cabin were nothing more than souped-up National Mower mowing machines in disguise.

"We are a company that runs on great customer service, and we get our best ideas for new products from listening to what turf professionals tell us are their most pressing challenges, and from observing how they actually tackle their turf maintenance programs," said Scott.

Both brothers are committed to spending a significant portion of their time watching and learning from their customers who perform the day-to-day work of maintenance. "We do spend a lot of time in the field, working with end users and performing product demonstrations," Scott said.

"Working side-by-side, we often see problems and how they could be solved," Scott said. "They're pragmatic solutions that seem obvious in hindsight. But the company's 100-year heritage of turf-care know-how really pays off in the new product development area. As the leader in this focus area, we challenge ourselves constantly to develop new product ideas that offer our customers tools to do their jobs better," said Scott. **/ST/**



JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL



ANSWERS FROM PAGE 17



The brown area on this collegiate intramural field is an outcome of an extremely sunny day in May. The damaged area on this lush bermudagrass turf was caused by an athlete applying sunscreen to their body and legs while standing on the field. The green oval shapes in the center of the brown area are actually the footprints of the person who applied the sunscreen. The Sports Turf Manager reported that he has seen smaller areas that were similar in appearance, but this was by far the largest yet. He also said it happens, to some degree, about two or three times each year. After the area turned brown, it was apparent that the damage was caused by sunscreen because of the "footprints of green." The Sports Turf Manager reported the incident to the intramural program staff to remind students to only apply sunscreen on non-turf areas and especially not on playing surfaces. Since the



damage occurred in May, the Sports Turf Manager let the turf grow back on its own and recovery took about 3 weeks for all evidence of the damage to disappear.

Photo submitted by Joe Collins CSFM, ALCLP, Landscape and Sports Turf Manager for Facility Services at Samford University, Birmingham, AL.

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



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Continued from page 31

Conrad added that the biggest factor currently limiting acceptance of battery-powered mowers on the part professional landscapers is the initial cost of electric mowers compared to traditional. “As the prices of traditional mowers keep sharply rising due to air pollution regulations, and the price of new battery technologies continue to decrease, more and more contractors will realize the benefits sooner, and begin to switch to all electric,” he said.

According to Graeme Harfman, director of product management at Delta-Q, a manufacturer of industrial battery chargers for lead acid and lithium-ion batteries, lithium battery technology is built on a foundation of cells, and a number of cells are built up to a pack. A battery management system (BMS) controls and manages the charge and discharge from that pack.

“As the cost of the lithium packs drops down, the market will adopt these, because it will reach a price that is nearer the internal combustion engine units, and the closer you get, the more it is going to adopt,” Harfman added.

According to Harfman, runtime versus cost is going to be an important metric for OEMs to follow. Monitoring how cost reduction factors in will determine a point in time when this technology will really take off.

“We can give the user the equivalent to running gas,” said Marchese. “But a 5-amp-hour battery is heavier than we would like. We have new technology, new cells coming that will reduce that weight. We will see 6 or 7 amp hours in same platform because of the reduced weight of the cells. We will see change in the next 12 to 24 months in terms of weight reduction.”

“As other markets adopt more lithium technology, the cost is going to decrease and the features are going to improve,” said Harfman. “There are a lot of innovations helping there, and bringing the price down.”

Where do we go from here?

“If there is any doubt in someone’s mind that the battery industry is a fad, or the growth will slow down soon, they are simply mistaken,” said Huffman. “Eventually, we won’t see year-over-year double-digit



Photo provided by Mean Green Mowers



Photo provided by Stihl



Photo provided by Husqvarna



Photo provided by Oregon

growth like we are now – simply because the math will run out – but the growth will continue. In the not too distant future, battery will outpace gas in annual sales in most of our categories. We already see this with certain market groups and industry associations reporting more battery sales than gas in some big categories.”

Johnsson said that battery products, in general, have become much more advanced. He added that there is much more advancement to be made with regard to motors – brushless vs. brush.

“It doesn’t always make sense to do everything brushless. Hedge trimmers, for example, need more torque, so maybe brush is better,” he added.

Huffman cautions that projections of technological advancements that will quadruple runtimes or charge batteries “in 5 seconds” are farfetched. “I’ll never say never, but most of those won’t become marketable products, and the ones that will are decades away from being so,” he added. “However, we should expect continued growth in capacity and power output, but at more reasonable rates.”

Johnsson said that the challenge with developing battery-powered equipment is to ensure that the equipment delivers professional-grade performance. “It’s hard to replace everything we have as gas with battery.” He pointed out that large chain saws and backpack blowers require a lot of power that would be difficult to do with battery. “It’s going to take the industry some time to figure that. We’re working on so many levels developing product and creating a vision of where we think we will be in 5 to 10 years, and where we will be as a group (gas, battery and robotics).”

According to Lentz, lithium-ion technology will continue to expand in terms of output and capacity during the next five to 10 years. He added that growth will be somewhat linear, but the focus will be on reducing charge times.

A competitive market

The shifts in the battery-powered outdoor power market have not just been shifts in the battery technology and the equipment itself. During the past few years, the OPE industry has seen a shift in battery-powered equipment manufacturers as well. Several manufacturers that were not traditional to the OPE market have introduced battery-powered OPE in recent years because they had an established foundation in battery technology in the power tool market (i.e., drills, saws, etc.). As power tool manufacturers have worked to introduce battery-powered OPE and adapt to the needs of OPE end users, traditional OPE manufacturers have had to adapt to battery technology.

“A rising tide lifts all boats,” said Huffman. “It’s great for the battery OPE

industry as a whole when you see some of these traditional tool manufacturers getting into the OPE space, creating general awareness for battery-powered OPE. From a purely industrywide perspective, it's done wonders to the awareness and growth of this category. That being said, not every tool is made equally."

According to Johnsson, the traditional power tool companies that have entered the battery-powered OPE market have done a lot of great things over the years, and he added that competition sharpens everybody. But he added that Husqvarna has nearly 330 years as a manufacturer and has been producing outdoor power equipment for close to 70 years. "We know how to create a product with the purposeful design the user needs," said Johnsson. "Our advantage in this market is that we have the knowhow of the end user."

According to Huffman, some players have done a great job introducing good-quality, good-value products, where others have fallen short.

"Good ones – and there are some really good ones – have put the industry on notice. They see this space as an opportunity for growth, and believe they can win here," said Huffman. "It's up to each individual company to decide how to respond – make better products, improving value to the customer, or get pushed aside by hungry, talented companies who may be new to the category, but are clearly here to stay."

Marchese said the influx of companies offering battery-powered OPE has made a vast difference in the competitive landscape.

"Several companies, including ours, have come into the market offering wider lines," said Marchese. "Companies that were not known five years ago are now becoming leaders. When you have a change in technology, industry leaders are not always the ones that win the war. We are cementing ourselves as the leader."

Poluka said that Stihl's focus has always been on outdoor power equipment.

"Our history has always been outdoor power equipment, and that is our main focus," said Poluka. "That allows us to produce battery-powered landscape tools to the quality of gasoline powered."



Photo provided by Toro

Lentz added that the level of competition is great for the industry, and it's exciting to see all the players who are invested in the space.

"Companies like ours have been focused on cordless technology for a long time," he said. "We don't focus resources on internal combustion engines. This user was new to us. The great thing is that we are resourced to learn about that user and their behaviors, and get up to speed in a relatively quick timeframe. The traditional

companies knew the user, but to get up to speed on cordless technology is far more challenging. That's why you have seen traditional power tool companies leverage that knowledge and get product to market pretty quickly."

Lentz added that the number of manufacturers adopting battery technology is great for the market and the end user, because it will lead to a safer user experience, better operator communication, less noise and fewer emissions. "It's a huge benefit," he said. "It's an exciting time to see everyone investing."

"Non-traditional outdoor power equipment manufacturers entering the OPE market have put pressure on companies like Toro to continue to innovate and differentiate," said Urlaub. "Ultimately, consumers will benefit from increased competition by taking advantage of the innovation that naturally follows." **IST/**

John Kmitta is associate publisher/editor of Outdoor Power Equipment magazine.





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Renovate your Park — Enter the 2019 “Our Winning Green Space” Contest

Project EverGreen, in partnership with Exmark Manufacturing, the Sports Turf Managers Association, and The Foundation for Safer Athletic Fields for Everyone (SAFE), join forces for the third annual “Our Winning Green Space” contest.

Municipal parks and recreation departments, public works departments, and non-profit agencies may enter the contest for a chance at winning an Exmark commercial mower package including Lazer Z X-Series zero-turn and Commercial 30 walk-behind mowers, valued at approximately \$15,000, as well as a “Healthy Turf. Healthy Kids.” playing field or park renovation project.

The entry process requires an essay and photos explaining why the city deserves the new equipment and renovated playing field. Entrants must explain how the prize will assist the community in maintaining a healthier, safer area for kids to play. Submissions may be entered at Project Evergreen from through April 26, 2019.

“Project EverGreen is thrilled to partner with Exmark and STMA on this opportunity to raise awareness of our “Healthy Turf. Healthy Kids.” (HTHK) program and the importance of safe, natural grass play fields for



Jonathan Allen, Earl Fairson (City of Clinton), Jason Keith (Blaylock Machinery) and Jimmy Simpson (STMA) during the mower delivery event for the City of Clinton, NC, the 2018 winner.

kids,” says Cindy Code, Project EverGreen executive director. “It’s also a fun opportunity for cities to share their story and compete for a field make-over.”

Jimmy Simpson, CSFM, and STMA Board Member also views HTHK as a way

to educate the public on the importance of safe athletic fields.

“Our partnership with HTHK helps parents, participating athletes and fans to understand that a well-maintained surface helps to protect athletes from injury,” adds Simpson. “Exmark’s generous mower package will greatly assist with essential ongoing maintenance to keep the surface safe.”

Previous winners include:

- 2017 - In Memory of Community Garden and the Warrendale Community Organization, Detroit, Michigan

- 2018 - Parks & Recreation Department, Clinton, North Carolina

Project EverGreen’s community-based renovation projects have revitalized nearly 1,000,000 sq. ft. of athletic and recreational greens spaces in Atlanta, Cleveland, Detroit, Milwaukee, North Chicago, IL, Belle Plaine, MN, Greensboro and Durham, NC, San Antonio, Ft. Worth and Round Rock, TX, East Harlem, NYC, Hazlet, NJ, Portland, OR, San Marcos, CA, and Phoenix.

For complete contest rules, visit www.ProjectEverGreen.org

Turf Surface Athletics announces new Grounds Crew program

Turf Surface Athletics has launched its support team, the Turf Surface Grounds Crew. It includes dedicated groundskeepers, the Turf Surface Athletics team, distributors, service, consultation, education and industry partnerships. The first of its kind program was formed to help support the sports turf industry including groundskeepers, field managers and field facility professionals in creating the best surfaces in terms of playability and safety.

“Turf Surface Athletics has been a trusted provider of field maintenance products for over 50 years, and with the company’s recent addition of infield mixes, new mound clays and field accessories, there’s no better time to introduce our new support program, the

Turf Surface Grounds Crew,” said Jeff Langner, brand manager. “Offering access to education, on-field consultation, products and exclusive offers, we’re dedicated to the continued success of today’s field maintenance professionals on every level.”

Participants of the Turf Surface Grounds Crew will receive the following benefits:

- Support including free soil testing and analysis
- Infield mix recommendations
- On-site consultation
- Field education clinics
- Product information and industry resources
- Product discounts and rebates throughout

the year



Upon sign up, members will be contacted monthly, gaining actionable best practices in building, maintaining and renovating playing surfaces from the Turface product experts, while also receiving first access to any special programs or clinics. In addition,

Turface specialists will be available to provide on-field consultations, product recommendations and soil testing.

Through its educational benefits, the Turface Grounds Crew aims to expand the network of professionals in the field maintenance industry. Helping

grow partnerships, connections and an educational community of industry thought leaders, its unique resources will help groundskeepers overcome current field maintenance challenges. The program currently lists over 500 members; www.turfacegroundscreev.com

MiLB symposium prioritizes professionalism

About 90 A, AA, and AAA field directors, managers and assistants gathered in Phoenix January 22 for the third annual MiLB Symposium sponsored by Ewing Irrigation and Landscape Supply, Hunter and Beacon Athletics, a rare opportunity for MiLB field professionals to share and learn new strategies from fellow managers and other experts.

Michael Clark, an owner and meteorologist for BAMWX, a weather forecasting company, warned field managers about the dangers of relying on inaccurate weather forecasts, especially apps.

Clark's company offers weather forecasting to many organizations including professional baseball teams. Having accurate forecasts can help prevent unnecessary cancellations or avoid catastrophe and help field managers plan their schedules. Sometimes that means calling or texting field managers minute by minute with updates on weather that could impact a game or field.

"You guys are professionals at what you are doing. Allow a professional in the weather to help you do what you're doing," said Clark.

When it comes to weather events that impact games and safety, he recommends knowing the decision makers that need to be involved, how quickly can you evacuate or shelter-in-place and how to notify fans of weather changes.

"Those are things a lot of people don't think about until it happens," he said.

The umpire's perspective

One thing most field managers may not be doing, but should, is stopping by the umpire's locker room for a quick introduction before the game, according to Adam Dowdy, a longtime MLB umpire.



Michael Clark, an owner and meteorologist for BAMWX.



Matt Parrott, the Charlotte Knights' head groundskeeper

"Let the umpire or crew chief know the condition of the field and any potential weather," Dowdy said.

Tell them where you'll be in event of rain or lightning, how much rain the field can take and how long it takes to pull the tarp and cover field, even if you aren't asked these questions.

"It goes a long way in building that rapport and trust," said Dowdy.

The umpire's focus is on starting every game on time and making sure the pace of the game is maintained and field managers can help them by keeping the ump informed of potential weather changes between innings and

being ready to quickly repair the field throughout the game.

Randy Mobley, International League President, also shared some perspective on changes and increasing professionalism of the MiLB.

The league has come a long way since his first days as an intern for the Columbus Clippers. Today there are graphic designers on staff and sleep scientists involved in schedule decisions. They even look at details like how field conditioners impact baseball wear and tear, said Mobley.

The Professional Baseball Agreement, which outlines Minor League Baseball facility standards hasn't changed much since 1990, but a new agreement is taking shape, meaning more change could be on the way, according to Mobley.

Field safety, playability and aesthetics have all become more important factors for MiLB teams and the field itself has become an attraction for fans. Because of that, field managers are playing major part in creating a bigger image and perception of the minor leagues, said Mobley.

The MiLB Symposium was started by Ewing Irrigation & Landscape Supply in 2017 and has been expanding ever since.

"We saw the opportunity to do something that wasn't being offered to minor league field managers," said Troy Smith, Ewing's National Sports Field Sales Manager.

While Ewing, Hunter and Beacon Athletics provided the space and structure, this was the first year minor league groundskeepers took more ownership of organizing the symposium, with an added focus on education, said Matt Parrott, the Charlotte Knights' head groundskeeper.

“There’s a new generation coming in at the ground level,” Parrott said. “The hope is that they build on the experiences that we gained . . . run with it and grow even more from a professional standpoint to remain viable.”

Tim Young, head groundskeeper for the DelMarva Shorebirds in Maryland, and one of the first-time attendees, said he hopes to return the symposium next year to learn more from his fellow MiLB field managers.

“There are 160 of us. We go through a lot of the same things, but we go through it differently. Getting to see new and different perspectives made the trip worthwhile.”- By Laura Ory, Ewing Irrigation & Landscape Supply

PRODUCTS



TMSYSTEM BY CUB CADET

The TMSystem transforms a triplex greens, lightweight fairway or Infinicut mower into a complete turf maintenance system for any playing field. By replacing the OEM cutting reels with application specific cassettes, this versatile cassette system saves the need to buy individual machines. The TMSystem improves overall surface quality and appearance with cassettes for verticutting, aerating, shallow solid tining, brushing, grooming and more. Fine tuning is quick and easy with the adjustable bedknife and wrenchless height markers within 0.004" increments for effective and consistent results on all sports turf surfaces.

INFILTRATION FOR NUTRITION AVAILABILITY

In agronomy, we put a lot of emphasis on creating nutritional availability by reducing

bicarbonate through acid suppression. Initially sulfurous or weak acids tend to show amazing signs of success however continued use can lead disappointment.

HCT LLC research shows many consistencies across all aspects of agronomy, supported by reproducible empirical results over varying waters, soils, environmental conditions and vegetation – varying crops, nurseries, turfs, ornamental and even water wells - throughout the western USA. The consistencies encompass carbonate bound scale, toxicity of sodium (usually bound with chloride), and a matrix of excess sulfur/ sulfate and bacteria propagating anoxic (non-aerobic) soil profiles, accompanied with sulfate reducing bacteria colonies, H2S and polysaccharide (a bio- film impervious to acids, oxidizers) which all hinder infiltration, nutritional transport and vegetation vitality, far beyond what we perceive.

WIENMANN DEBUTING NEW SUPER 1300 S

Wiedenmann announced its new SUPER 1300 S in February. The SUPER 1300 S is an ideal solution for efficiently collecting grass clippings, leaves, and other debris on athletic fields. The SUPER 1300 S is equipped with double sweeping rotors. Each sweeping rotor has four sweeping rails that ensure great results while completely filling the 1300 S during backward maneuvers collection container.

The machine is mounted on the three-point hitch of the tractor and is extremely maneuverable giving a significant advantage when working around trees and other obstacles when the container is approximately 90 percent full.

The SUPER 1300 S is the ideal solution for efficiently collecting grass clippings, leaves, and other debris on athletic turf surfaces.



PBI-GORDON INTRODUCES UNION FUNGICIDE SC

Newly developed Union Fungicide SC from PBI-Gordon Corporation is specifically formulated to provide excellent disease

control on sports fields. Union is not yet available for sale or distribution. U.S. Environmental Protection Agency (EPA) registration for the fungicide is anticipated for mid- to late-2019. Testing has shown that Union is effective in the preventative and curative treatment of pythium diseases (blight, damping off, root dysfunction, root rot), brown patch, anthracnose, cool-weather brown patch, yellow patch, fairy ring, gray leaf spot, red thread, summer patch and rhizoctonia. A flowable liquid, Union is a formulation of the active ingredients azoxystrobin and cyazofamid. The dual modes of action in the fungicide features a proprietary combination of chemistry found in FRAC Groups 11 and 21. Union will be labeled for use on all cool-season and warm-season turfgrasses: Kentucky bluegrass, fine fescues, tall fescue, perennial ryegrass, bentgrass, bermudagrass (common or hybrid), kikuyugrass, seashore paspalum, St. Augustinegrass and zoysiagrass.



NEW SOCCER GOAL ANCHORING SYSTEM

We have invented state of the art soccer goal anchoring systems; easy to install and good for natural grass or synthetic fields. Why take a chance that your system works like sand bags or short nails or rusted anchors that have been installed years ago and you think they are safe! Imagine if they are not safe and players get hurt; don't say, "I should have changed them." www.kwikanchor.net

BAYER RELEASES NEW DIGITAL TOOL TO HELP TURFGRASS MANAGERS

The Turf and Ornamental business of Bayer has released the new Bayer Golf Solutions Guide, a digital tool specifically designed to help turfgrass managers quickly assess turf issues by making agronomic expertise more accessible. The guide draws on the shared knowledge of the Bayer Green Solutions Team, development scientists, product managers and area sales managers. It is comprised of two main sections: one with identification and treatment recommendations for key agronomic issues and another with product information on application rates, timing and more.

NEW ENGLAND PATRIOTS CHOOSE IRONTURF

GeoSurfaces North East announced that the New England Patriots have installed IRONTURF at their indoor practice facility in Foxborough, the Empower Field House, which also serves as practice site for Major League Soccer's New England Revolution. IRONTURF is manufactured in the US by Greenfields USA. The just-completed field is approximately 80,000 square feet and is lined for both football and soccer. This project is the culmination of a successful trial installation of IRONTURF done in 2017. After testing for more than a year, IRONTURF was selected for the Empower Field House installation. The product features top-of-the-line synthetic fibers combined with a patented weaving technology. GeoSurfaces, an exclusive distribution partner of GreenFields USA, has completed several other installations of IRONTURF around the country.



FERTIGATION SAVES MONEY

Turf Feeding Systems can save any sports field \$10,000 annually and improve quality, says owner Michael Chaplinsky. Fertigation can reduce labor, water, fertilizer, chemicals and improve quality on any sports field, and he guarantees it. Fertigation is the best tool to add to any irrigation system to automatically fertilize to produce thick dense grass with deep roots. Turf Feeding Systems offers fertigation for a single sports field or a twenty-field complex. Call us to discuss your sports field. mc@turffeeding.com /ST/

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► FIELD

VARSITY SOCCER FIELD

AVON HIGH SCHOOL

► LOCATION

Avon, IN

- **Category of Submission:** Schools/Parks Soccer
- **Sports Turf Manager:** Matt Dudley
- **Education:** Bachelor of Science, Turfgrass Science and Management, Purdue University
- **Title:** Athletic Fields and Grounds Supervisor
- **Experience:** Part-time student employee at Purdue University Athletic Fields 2013-2015; summer intern for the Indianapolis Indians in 2013; Game day grounds crew, Indianapolis Indians 2016-present; Assistant groundskeeper, Brownsburg Community Schools 2015-2016; Athletic Fields and Grounds Supervisor: Avon High School 2016-present
- **Full-time staff:** Bob Mummert and Eric Radican
- **Original construction:** 1999
- **Turfgrass:** Kentucky bluegrass, perennial ryegrass and tall fescue
- **Rootzone:** Silty clay loam
- **Overseed:** We overseed after core aerifying in April with around 3 lbs/1000 sq. ft. of Kentucky bluegrass. We do this to try to incorporate more Kentucky bluegrass into the field since it was mostly perennial ryegrass when I started in 2016. Since the KBG is rhizomonous it does a better job of recovering from traffic than the

ryegrass does. We feel it is also better with disease, heat tolerance, and traffic tolerance.

- **Drainage:** Herringbone system

Why should STMA consider your field a winner?

The Avon High School Varsity Soccer Field should be considered for the Field of the Year because we provide a high-quality playing surface for our athletes without breaking the bank. Between managing 50 acres of turfgrass total from athletic fields to common areas, weekly events involving multiple sports, and all of the other responsibilities we have aside from turf management, we stay very busy all the while on a conservative budget. It is only by working efficiently, spending our budget wisely, and using our knowledge that we are able to give the turfgrass not only what it needs, but when it needs it.

There isn't one main reason why our field should win the Field of the Year, but rather it is a combination of a lot of little things that add up to a big picture of a high-quality natural grass playing surface for our athletes.

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

A list of these “little things” includes:

- Contracting out our core aerations to J+D Turf. Our aerator is a ground driven and has 6” x 6” spacing that only affects about 1% of the surface and only goes 1-2” deep. By contracting out our aerations we get tighter spacing and deeper cores with the PTO driven aerator. This allows us to have deep channels to get oxygen and water deep into the rootzone.

- Soil testing yearly allows us to build a fertility program based on what the field needs. We saw we were low in phosphorus and high in organic matter so we focused more on applying less nitrogen and more phosphorus especially when we overseed.

- Dethatching the field twice a year with the Spring Tine Rake allows us to remove any built up thatch from the canopy and gives the turf room to grow and enhances color.

- Before this year we used aerosol paints to line our field and while all right, we knew it could look better. We bought an iGo Linemark painting machine and our lines look great. We’re saving time and paint because the lines last longer so we don’t have to paint as much, and we cut our total paint cost by 25%.

- Using organic fertilizers has provided us with great results as a granular fertilizer and it is also a more natural, environmentally friendly product. Healthy Grow 2-4-3 worked really well for our soil test and provided great results.

Without incorporating these practices, our field’s appearance would not only be affected but the success of our athletes as well. We pride ourselves on creating a safe and playable field that our school, coaches, fans, and most importantly our athletes can be proud to play on.



SportsTurf: What’s your background? How did you get into sports turf management?

DUDLEY: I grew up playing baseball at Wapahani High School where my Dad is the coach and worked with him on the field. It never occurred to me that a career path in turf management existed until my shop teacher, Mr. Friend, suggested looking into a Turf Science and Management degree at Purdue University. After meeting with Dr. Cale Bigelow and learning about the program, I enrolled and got into the profession. My degree opened doors to not only learn about turf in the classroom, but allowed me to learn in the field through internships with Delaware County Club (Muncie, IN), the Indianapolis Indians, and Chevy Chase Club (Chevy Chase, MD). I also was fortunate enough to work on with the grounds crew on the athletic fields at Purdue.

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

DUDLEY: The biggest challenge we face is the weather. Mother Nature in Indiana is inconsistent and can change quickly causing our team to adjust plans regularly. We approach this challenge by remaining as flexible as possible. Utilizing nice days even on the weekends is important as well as working later into the afternoons to accomplish important tasks. We are lucky that our administration allows us to offset these hours on days that may not be as friendly outdoors.





ST: *What changes if any are you considering or implementing for the winning field in 2019?*

DUDLEY: As part of a school corporation, smart budgeting is of utmost importance. In the past, we have contracted out our spraying applications and this year we are looking forward to doing this in-house by purchasing the necessary equipment. Not only will this save our corporation money in the long run, but also it will give us more flexibility on when the applications are done.

ST: *What's the greatest pleasure you derive from your job?*

DUDLEY: One of the best aspects of my job, weather permitting, is being able to work outside. I like growing and maintaining high quality turf grass for our athletic fields and grounds. Put simply, I just like to "grow it and mow it."

I also take pride in knowing that the high quality fields we maintain make a difference to the players, coaches, and fans. It is always a reassurance to hear a team walk onto the field and compliment about how nice it is.

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

DUDLEY: I've been lucky enough to learn from many great mentors during my career, but thus far the piece of advice that sticks out to me is from Joey Stevenson, Director of Field Operations for the Indianapolis Indians. I remember Joey saying, "Don't be afraid to try something new. If you always do what you have always done, you're always going to get what you've always got." In order to improve, you must step outside your comfort zone and try something new. Thinking differently and trying new ideas, new products, and giving new techniques a try has been beneficial for me especially within the last few years.

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

DUDLEY: The STMA, to me, represents a network of people to exchange experiences with and learn new ideas from. From

the conference to the magazine and the website, the STMA also provides numerous resources that encompass all aspects of the profession. Being a member means you always have access to the most cutting edge information.

Not only that, but the STMA extends its reach to those outside the field through social media to promote the importance of high quality playing fields and our role as turf managers in maintaining them.

ST: *How are you using social media at work?*

DUDLEY: Social media provides a way to keep a pulse on what is going on the industry around the world. I personally use Twitter as my main platform to see what other turf managers are doing and share ideas. While I haven't tweeted much in the past, a goal of mine this year is to create more content on social media as I feel it is a great way to share ideas with other turf managers and give people in the community insight into what it takes to make aesthetically pleasing and safe athletic fields.

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

DUDLEY: My wife and I were recently married, so we look forward to spending time together outside of work. Hiking is something we both enjoy and we like to explore different state parks. We also enjoy spending time with family so whether it's on holidays, weekends, or family get-togethers, we're always happy to be around them.

As an avid sports fan I always like watching sports whether on TV or in person but I'll always be rooting for the Boston Red Sox, Indianapolis Colts, and as a Purdue grad I'm always pulling for the Boilermakers. My father-in-law, Ray, has season tickets for the Colts so I'm usually lucky enough to be able to go with him to almost every home game. One of our summer vacation ideas is to go to a Red Sox game at Fenway. I've never been before so after many years as a die-hard fan it's toward the top of my bucket list. */ST/*

Maintenance plan

JANUARY

Grass is in winter dormancy. Attend the Indiana Green Expo for Continuing Education Credits for Indiana Pesticide Applicators License. Attend Annual STMA conference. Continue to work on building turf management program and budget for the upcoming season.

FEBRUARY

Grass is still in winter dormancy. Perform annual soil test. We welded one of the goals back together that had a crack in it.

MARCH

Temperatures begin to slowly rise so we start mowing once a week with John Deere 7400 Contouring Rotary. Height of cut at 1.75". We receive 10" of snow on March 24th but temperatures rise into 50s with rain the next few days so snow melts quickly but very saturated. Track & Field begins practicing throwing discus at the corner of the field.

APRIL

Very cold start to the month with on and off snow showers until Mid-April. Only mow once a week during the beginning of the month but once weather breaks around mid-April we start mowing twice a week. Turn on irrigation system and check to make sure all irrigation heads work properly. On April 24 J+D Turf core aerated and topdressed the field with 22 tons of USGA rootzone sand. After aeration and before topdressing we overseeded with Advanced Elite Blue Blend of 100% Kentucky Bluegrass at 4 lbs per 1000 sq ft. After topdressing the field is drug to broom in the sand and help break up the cores. After the field was drug it was then fertilized with 16-28-12 at 4 bags/A. Since our soil test showed we were a little low in phosphorus this helps establish the new seedlings. Discus practice continues almost daily.

MAY

We had the warmest May on record in Indianapolis area. Mowing two times a week. J+D Turf sprayed Foliar Pak Grow In at 500 oz/A and ArmorTech PGR 113 MC at 16 oz/A. The PGR helps us keep the height short while only mowing twice a week, which saves time when we are already busy with spring sports. Foliar Pak Grow In helps the new seedlings establish and helps the turf recover from April's cultural practices.

JUNE

Mowing two times a week. Discus practice on the field has come to an end. We ran the spring tine rake over the field to remove thatch built up from spring months and then vacuum up debris. This really helps give the grass room to grow and helps improve color. J+D Turf sprayed ArmorTech Trione (Mesotrione) at a rate of 5.1 oz/A, PGR 113 at 16 oz/A, and Foliar Pak Grow In at 500 oz/A. The mesotrione was applied to treat any present broadleaf weeds, summer annual weeds, and a few spots of creeping bentgrass. Fix solenoid on one valve that wasn't turning on from the controller. Raise three irrigation heads that were low. While raising the heads we noticed the top of the soil was wet but deeper down it was dry.

JULY

Dropped height of cut from 1.75" to 1.5" to start getting ready for games. Mowing three times a week. The weeds

and bentgrass are dead and we ended up having more bentgrass than what we thought. We run the spring tine rake over the field again to help remove the dead bentgrass and vacuum up the debris. There are a few bare spots so we seed Barenbrug RPR into those areas. The field is then fertilized with Healthy Grow 2-4-3 at 11 bags/A. J+D Turf sprayed Zenith (Imidacloprid) at 26 oz/A, Foliar Pak Bio Drive at 9 oz/1000 sq ft, and Hydro Pak Command at 16 oz/A. The Zenith was applied for white grub control and the Command and Bio Drive we sprayed to help push the water deeper into the rootzone. We located corner markers and measure distances for field dimensions as we start lining to field with our iGo Linemark painter for scrimmages towards the end of the month. We moved the goals and team benches back onto the field and set up the nets on the goals.

AUGUST

The season is in full swing now and mowing three times a week. The field sees 16 games from when the season starts on August 11th until the end of the month. Before the season started J+D Turf sprayed ArmorTech TM 462 (T-methyl) at 5.33 oz/1000 sq ft, PGR 113 at 16 oz/A, Foliar Pak Micros Plus at 3 oz/1000 sq ft, and Foliar Pak Play On at 500 oz/A. Disease pressure has been high with heat, humidity, and rain and we saw a little Gray Leaf Spot so we sprayed the fungicide to help protect the field during season. We sprayed the Foliar Pak products to help the turf recover quicker from traffic and give us extra green color. We seeded Barenbrug RPR into goal mouths and high traffic areas as needed.

SEPTEMBER

Season continues to go on as the field has 17 games played on it during this month. In the first week of the month we fertilize with Healthy Grow 2-4-3 at 11 bags/A. J+D Turf sprayed the field with PGR 113 at 16 oz/A, Foliar Pak Play On at 500 oz/A, and Foliar Pak Micros Plus at 3 oz/1000 sq ft. The 2-4-3 and Foliar Pak products helped give us good color and help the field recover from traffic quicker especially since we had an unusually wet fall and played a few rain games that trafficked the field more than normal. We seeded Barenbrug RPR into goal mouths and high traffic areas as needed.

OCTOBER

The season is over in mid-October but teams still practice on the field until they are eliminated from postseason tournament. Raise height of cut .25" after the season is over to help the field recover from heavy use the last few months. J+D Turf sprayed the field for broadleaf weeds with Millennium Ultra at a rate of 1.5 oz/1000 sq ft.

NOVEMBER

Play on the field is all wrapped up so we put goals, nets, and team benches away for the year. Winterize irrigation system and mark all heads with aerosol so we know where they are when system isn't pressurized in case we aerify in the spring before the system is turned on. The day before Thanksgiving we fertilize with all mineral 34-0-4 at a rate of 6.25 bags/A.

DECEMBER

The grass is going dormant for the winter so mowing ceases. Start working on servicing equipment. Replace front castors and castor brackets on John Deere 7400 Contouring Rotary mower. We make sure everything is put away for the winter and start getting ready for next year.

STMA & Project EverGreen partner on contest

Nominate your park, playing field or public green space for a chance to earn a free renovation and a professional mower package.

STMA in partnership with its charity, The SAFE Foundation, Project EverGreen and Exmark Manufacturing, join forces for the third annual “Our Winning Green Space” contest, which runs through April 26 with the winner being announced in early May.

Municipal parks and recreation departments, public works departments, and non-profit agencies may enter the contest for a chance at winning an Exmark commercial mower package including Lazer ZX-Series zero-turn and Commercial 30 walk-behind mowers, valued at approximately \$15,000, as well as a “Healthy Turf. Healthy Kids.” playing field or park renovation project.

The online submission process requires an essay and photos explaining why their city deserves the new equipment and renovated playing field, and how it will assist them in maintaining a healthier, safer area for kids to play.

Submissions can be made at STMA.org or www.ProjectEverGreen.org through April 26.

“Project EverGreen is thrilled to partner with Exmark and STMA on this opportunity to raise awareness of our “Healthy Turf. Healthy Kids.” (HTHK) program and the importance of safe, natural grass play fields for kids,” says Cindy Code, Project EverGreen executive director. “It’s also a fun opportunity for cities to share their story and compete for a field make-over.”

Jimmy Simpson, CSFM, and STMA Board Member also views HTHK as a way to educate the public on the importance of safe athletic fields.

“Our partnership with HTHK helps parents, participating athletes and fans to understand that a well-maintained surface helps to protect athletes from injury,” adds Simpson. “Exmark’s generous mower package will greatly assist with essential ongoing maintenance to keep the surface safe.”

PREVIOUS WINNERS INCLUDE:

2017: In Memory of Community Garden and the Warrendale Community Organization, Detroit, MI

2018: Parks & Recreation Department, Clinton, NC

In January, STMA partnered with Project Evergreen to renovate a field at Lindo Park in Phoenix a day in advance of



From STMA Conference in Phoenix: SAFE Charity tournament winners. L to R: Sean Connell, Joseph Lobb, Neil Casale, and Kevin Grieder.



Jonathan Allen, Earl Fairson (City of Clinton), Jason Keith (Blaylock Machinery) and Jimmy Simpson (STMA) during the mower delivery event for the City of Clinton, NC, the 2018 winner.

the 30th Annual STMA Conference and Exhibition. More than 100 STMA members and community residents participated in the renovation. **/ST/**

STMA recently partnered with its NESTMA chapter to provide factual information to legislators and regional media. Contact STMAinfo@STMA.org if you would like something developed for your chapter or download one that is STMA-branded at STMA.org/Institute. (opposite and page 46)

ENVIRONMENTAL BENEFITS OF NATURAL TURFGRASS



Trap and Store Carbon

Over the course of a year a 2,500 sq. ft. lawn will absorb enough carbon dioxide to produce oxygen for a family of four, and a soccer field can offset the carbon produced by a car driving 3000 miles.



Erosion Control

The average soccer field can absorb 50,000 gallons of water prior to runoff occurring. Turfgrass systems are used to stabilize soil, slow water flow, and filter out sediments in the water prior to the water entering storm drains or natural bodies of water.

Dust and Pollen

Turfgrass leaf tissue and its fibrous root systems are very effective at trapping much of the 12,000,000 tons of dust that is released into the atmosphere each year in the United States.



Contaminants

Turf systems are efficient at holding onto nutrients, such as phosphorus, and household and industrial pollutants. Turfgrasses filter soil and remove chemicals before they enter surface or groundwater.



Temperature Modification

Natural grass athletic surfaces can be up to 30 percent cooler than asphalt on a hot summer day. The overall environmental cooling effect of turfgrass can be seen by comparing natural turfgrass surfaces to home AC units. The front lawns of 8 average houses have the same cooling effect on the atmosphere as twenty-four 3-4-ton air conditioning units.





EXPERTS IN THE FIELD,
PARTNERS IN THE GAME



SYNTHETIC TURF OR NATURAL GRASS SPORTS FIELDS?

WHAT ARE CONSTRUCTION COSTS?

SYNTHETIC TURF

Single-field building costs range from **\$6.00-\$10.25/sq ft**.

NATURAL GRASS

Single-field building costs are dependent on soil used:
On-site native soil: **\$0.60-\$1.50/sq ft**
Native soil: **\$1.50-\$3.00/sq ft**
Sand cap: **\$2.75-\$4.00/sq ft**
Sand: **\$5.50-\$8.00/sq ft**

HOW HOT IS EACH SURFACE?

SYNTHETIC TURF

High surface temperatures are directly related to clear, sunny, and hot conditions. The **maximum surface temperature** recorded is **183°F**.

NATURAL GRASS

Surface temperatures **rarely rise above 85°F**, however, in **dry conditions midsummer**, temperatures have been recorded at **98°F**.

WHAT ARE MAINTENANCE COSTS?

SYNTHETIC TURF

A **K-12 School in Kansas** spends **\$6,800** on maintenance annually. Additionally, the field averages **360 labor hours**.

Michigan State University spends about **\$22,760** on maintenance and labor annually. The field averages **280 hours in labor**.

NATURAL GRASS

A native soil field at a **K-12 School in South Carolina** spends roughly **\$9,450** on maintenance annually. Additionally, the field averages **300 labor hours**.

Duke University spends roughly **\$24,550** annually on maintenance and labor for a sand-based field. The field averages **480 hours in labor**.

WHAT CAUSES FIELD HARDNESS AND WHAT IS THE THRESHOLD?

SYNTHETIC TURF

Areas that lose infill, such as **inlays, painted areas, seams, and high-use areas** can have increased surface hardness. The values of **100 Gmax*** (Clegg Impact Tester, ASTM 1702) and **164 Gmax*** (ASTM F355 missile A) are the upper limits.

NATURAL GRASS

Gmax* of natural grass fields can vary greatly over short periods of time due to **changes in soil water content and the amount of field usage**. The same values of Gmax* apply to natural grass fields.

*Gmax is the value generated when testing surface hardness and provides an indication if a field is safe for play or if steps must be taken to reduce surface hardness. Gmax testing should occur annually, with more frequent testing suggested on heavily-used fields.

stma.org/institute

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STMA advances professionalism in sports field management and safety through education, awareness programs and industry development.



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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



Talking pesticides, thinking organic

Q: *I am looking for information on how to talk about using pesticides with my clients. I'd also like to know more about organic weed control methods.*

A: During any conversation like this, it's essential that everyone agree that the safety of the athlete and the performance of the field are the main goals. Those goals are achieved by having a sound IPM program in place, which should ultimately limit the amount of weeds, pests and diseases on the field. Showing your clients that you have a strong IPM program, you have field assessment documentation, like the STMA's PCI, and are perhaps working toward the STMA Environmental Certification, will all add credibility to anything you have to say. Even so, be prepared for someone in the meeting to be completely intolerant of pesticides, because sometimes it isn't about facts, it's about perception.

If you deem it necessary to apply a pesticide if, for example, there is grey leaf spot disease and the turf is dying, explain what will happen if you do not act. Also state what you are applying. You are legally required to explain what you are spraying and have the safety data sheet (SDS) onsite. Answering the question about the safety of pesticides in relation to people, animals, and the environment is a little more complex, because the word "safe" means different things to different people. The term "risk" is perhaps more appropriate.

Pesticides are regulated by the EPA and have gone through more than 100 different health, safety and environmental tests over several years. Explain that you use registered pesticides according to the label directions that, after the reentry period, should be reasonably low risk. A lengthier explanation on toxicity (LD50) and exposure could also be given if the situation calls for it. Be prepared for questions about whether a pesticide causes cancer, about the effects on

wildlife (particularly pollinators) and about water contamination. Thoughtful, educated answers can, in many cases, satisfy concerns that field users might have. I have added information at the end of this piece about articles and PowerPoint presentations developed by Ohio State weed scientist Dr. Dave Gardner that you are welcome to use.

In relation to organic herbicides, the EPA keeps a list of active ingredients that are eligible to be considered minimum risk products. These are exempt from federal registration and thus do not have an EPA registration number. Commonly seen active ingredients for weed control in turf that appear on this list include corn gluten meal and sodium chloride. The EPA also has a list of approved biopesticides. These are reduced risk products but do not meet the criteria necessary for EPA exemption. Chelated iron, acetic acid, and pelargononic acid are examples of herbicides in this category. So if you are considering the use of organic herbicides because a law was passed in your area that says you have to, you need to check specifically as to what products you are allowed to use.

The majority of products from the EPA minimum risk list are non-selective, including cinnamon oil and eugenol. Biopesticides like

acetic and pelargononic acid are also non-selective and very fast acting. Since they are contact herbicides they may require repeat applications for perennial weeds.

For preemergence weed control, corn gluten meal (CGM) is the option for crabgrass and dandelion control, applied twice during the season. CGM contains 10% nitrogen and no phosphorus or potassium. The recommended rate of CGM is 20 pounds per thousand square feet. This application thus provides 2 pounds of slowly available nitrogen, and applying in both fall and spring would provide 4 pounds of your annual nitrogen

PESTICIDES ARE REGULATED BY THE EPA AND HAVE GONE THROUGH MORE THAN 100 DIFFERENT HEALTH, SAFETY AND ENVIRONMENTAL TESTS OVER SEVERAL YEARS. EXPLAIN THAT YOU USE REGISTERED PESTICIDES ACCORDING TO THE LABEL DIRECTIONS THAT, AFTER THE REENTRY PERIOD, SHOULD BE REASONABLY LOW RISK.

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