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ALSO INSIDE:

Updates on university turf research
Bristol Motor Speedway hosts college football
Turfgrass response to field paint
Effective verbal communication with employees

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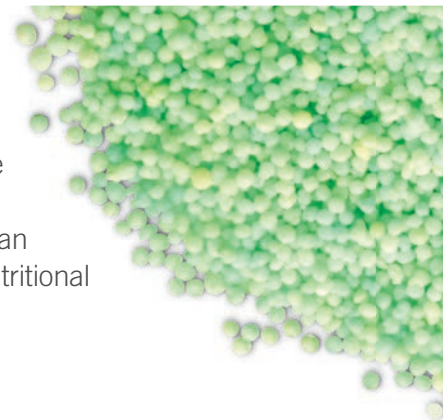
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ON THE COVER: Jesse Pritchard, CSFM, and assistant turf manager, Phil Bathalon, managed their way to the 2015 STMA College Soccer Field of the Year. Klockner Field at the University of Virginia is one of three natural grass fields in the NCAA that hosts Division I men's and women's soccer and lacrosse. Pritchard says, "I choose to be positive. We have our headaches, but they are no larger than that of any other crew."

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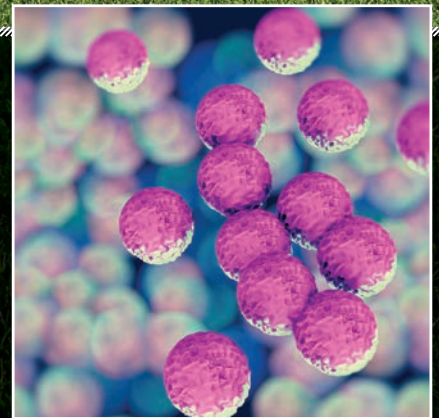
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DARIAN DAILY, RIP

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The sudden and tragic news of the passing of Darian Daily, head groundskeeper for the Cincinnati Bengals, hit me particularly hard.

Darian, as well as his wife, Carole, have been great friends of this magazine for years. Along with everyone who knew him, I experienced his generosity, good humor, and willingness to help others. Despite his schedule Darian was never too busy to respond to my questions or requests to share his expertise with our readers, his friends and peers.

When he hosted an STMA Regional Conference in the Queen City several years ago, Darian took time to talk to me for 10 minutes when there were probably a dozen other things he could have been doing. At the national STMA Conferences, he'd stop and ask me how things were going and seemed to always have an entourage of younger turf managers following him around.

While the shock many of us felt when hearing the news will eventually go away, the example Darian set of how to combine kindness, professionalism, and fun will never be forgotten.

Please go to <http://www.gofundme.com/2m9n25kv> if you would like to make a contribution to Darian and Carole's children's future. May they come to understand what a difference their father made in so many lives.

HIRE A PROFESSIONAL

Another late friend of the magazine, former group publisher Bob Earley, long ago told me the story of how his then-middle school son answered a math word question by writing on his test paper, "Hire a professional."

That story came to mind after the disaster in Canton, OH in August when the National Football League cancelled the Hall of Fame game because the field was deemed unsafe shortly before the scheduled kickoff. From what I could learn about the situation from sources that didn't want to be named, the main takeaway was that no professional sports turf manager was involved in the decision making of how, with what, and when to paint the midfield logo.

My understanding is a competent crew worked to prepare the field and do initial painting, and following their work the field was certified as playable, but that they were gone by the time NFL personnel started making decisions, including allowing someone to try and groom the synthetic surface with a street sweeper!

According to a memo sent from the NFL office to league owners, the league, going forward, will ask the NFL-NFLPA Field Surface Safety and Performance Committee to "study and advise on: injury prevention; improved field surface testing methods; and the adoption of tools and techniques to evaluate and improve field surface performance/playability."

The league does deserve credit for making what must have been a painful decision to cancel the game but let's hope the lesson takes: if you want a job done right, hire a professional.

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THE JOB WITH MANY HATS

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Last month I talked "turf." Natural turf and artificial turf play only a portion of what our job descriptions really entail as sports turf managers.

Taking care of our playing surfaces can be the very tip of the very top of the giant iceberg that lies beneath. Our human resources departments have typical descriptions of our job, but sometimes using layman's terminology. Here is an example of one:

"Manages the care, maintenance, and renovation of all athletic fields, grounds, and related amenities. Performs, plans and organizes maintenance standards for mowing and painting. Implements development and maintenance goals, policies and procedures. Analyzes disease, insect, and other turfgrass stress problems. Applies appropriate pesticides and other measures to resolve problems. May assist in the selection of capital improvement projects. Responsible for interviewing, hiring, and discharging subordinates. Recommends and presents budgets to the Director. Responsible for selecting and purchasing equipment, supplies and materials. Oversees protection of athletic fields during special events. Works to ensure safe work operations, development, and the implementation of safety procedures for work crews. Ensures equipment is properly maintained and safely operated. Maintains the irrigation system for the fields and installs, and modifies system as necessary."

In reality, sports field managers have jobs that require wearing many hats that span many professions. Granted, we do not wear some of these hats every day, but one must possess a thorough competency in each and be educated in these areas. Words such as *manages, supervises, develops, implements, oversees*, etc., are great action verbs to use before a professional description of our

work. However, we need to encourage our human resources departments to use more professional terminology and descriptions. Many of these skill sets are in fact their own individual occupation. Here are some skill sets/job titles that we may have to possess:

Turfgrass and Weed Technologist; Plant Nutritionist and Pathologist; Project Manager and Architect; Soil Engineer and Chemist; Coach, Business Manager, Finance Expediter, Human Resources Manager, Purchasing Agent; OSHA Facilitator; Irrigation Specialist; Picasso; Equipment Operator and Mechanic; Meteorologist; Waste Management Specialist; Sustainability Manager; Insurance Agent.

People in these individual vocations have to work hard and be educated in their field. I am not undermining their years of valued expertise as I compare their job titles to what we do in reality as sports turf managers.

No matter where the sports field manager fits in the level of hierarchy at their institution, each can touch some of these professions. The last title, Insurance Agent, may be the one least thought of or realized. On top of the other performance competencies, we need to ensure that our athletic surfaces are safe. What financial liability dollar figure can be put on that? We all have to pay insurance premiums for homes or automobiles. Employing skilled and educated sports field managers is the best insurance policy for our facilities.

I would like to dedicate this month's "President's Message" in memory of Darian Daily, the head sports field manager for the Cincinnati Bengals, who passed away in late August.

UPDATES ON UNIVERSITY RESEARCH OF INTEREST TO TURF MANAGERS

Editor's note:

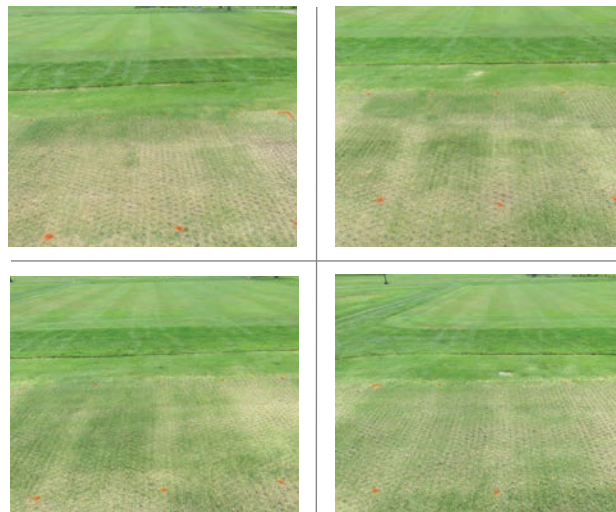
Once again we have asked some of the nation's leading turfgrass research programs to share some details on what they are currently working. Look for more updates in coming issues.

University of Kentucky

Zoysiagrass for sports turf. Zoysiagrass has long been considered unacceptable for athletic fields because its rate of recovery is quite poor compared to other grasses. There are, however, many beneficial reasons to consider zoysiagrass, including excellent wear tolerance, shade tolerance, tolerance to high and low air temperatures, C4 photosynthetic pathway (reduced water usage compared to C3), and stolons and rhizomes for footing and recovery. Although the above are all great reasons for using zoysiagrass, the few athletic facilities that have tried it over the years have quickly moved to a different species because of the recovery concern.

However, because there are several new cultivars available, a study was designed to test recovery of zoysia cultivars following traffic. Zoysias used in the study included the *Zoysia japonica* cultivars 'Meyer' and 'Compadre' (seeded), and the *Zoysia matrella* cultivars 'Diamond' and 'Zeon'. Cultivars were planted by sprigs or seed during the summer of 2014 and traffic was initiated beginning July 2015 and repeated in July 2016. Traffic was applied 17 times over a 6-week period with a Brinkman traffic simulator in two directions on each event. Nitrogen (urea) was applied every 2 weeks beginning early June at rates of 0, 1/4, 1/2, and 1 lb. N/1000 ft² until September. Following the traffic period, digital images were taken for recovery analysis each week until recovered. Initial data taken immediately following the traffic period showed that Compadre (35%) and Meyer (36%) had significantly less cover than Diamond (44%), which was less than Zeon (56%). By 4 weeks after traffic, turf cover had improved to 84% for Meyer, 89% for Diamond, 91% for Compadre, and 95% for Zeon. Nitrogen rates were also important in that no nitrogen caused more plot disruption during traffic and less recovery following traffic. Excessive nitrogen (1 lb. N/1000 ft² every 2 weeks) was also not beneficial as there were no differences between the 1/2 lb. and 1 lb. rates at any observation date.

Fraze mowing. Fraze mowing research being conducted at UK includes fraze mowing bermudagrass as a pre-plant treatment to improve perennial ryegrass overseed and fraze mowing to convert old bermudagrass cultivars to new and improved cultivars. The overseeding study is being conducted with the University of Tennessee and we've found that removing the bermudagrass canopy with a fraze mower is a



Effect of traffic on zoysia cultivars and N rates following 17 traffic events. Nitrogen treatments are from low to high (right to left) in each image. L to R: Meyer; Diamond; Zeon; and Compadre.



Bluegrass and bermudagrass cohabitating the same space. Notice the difference in color on the plot compared to the bermudagrass only area to the left.

very effective method of establishing perennial ryegrass. The one large concern with this method is that it takes a full week for the perennial ryegrass to germinate and begin to fill in so the only situation where fraze mowing would work as a pre-plant method is when there is an off week between games.

The bermudagrass conversion work is being conducted with Mississippi State University and looks promising when glyphosate is applied prior to fraze mowing. 'Riviera' bermudagrass was seeded into each plot and the least amount of common bermudagrass regrowth occurred on plots where deeper cuts were made that were preceded by an herbicide application.

Joint study on establishing Latitude 36. We have also completed a joint study with Louisiana State, Oklahoma State, and Mississippi State, looking at sprigging and nitrogen rates for optimum establishment of Latitude 36 bermudagrass. Higher sprig rates with judicious or even no nitrogen during the establishment period resulted in the quickest time to 100% cover.

I frequently get the question from sports turf managers managing bermudagrass, "How do I seed bermudagrass in the spring without annual grassy weeds taking over the stand?" We are working with a chemical company on this problem and are seeing very promising results using a pre-emergent herbicide at seeding that is selective towards the grassy weeds, but not bermudagrass. This study will continue next year as well but currently we are seeing about a 60-80% reduction in crabgrass and goosegrass in treated versus untreated plots.

Maximizing turf cover in all seasons. Lastly, we are working with Brian Winka, CSFM, Chesterfield, MO Parks and Rec, on mixing bermudagrass and Kentucky bluegrass to maximize turf

cover during all seasons. Early results show excellent color and cover. This is exciting work that could change the face of sports turf management in the transition zone.

Compiled by Dr. Gregg Munshaw, Turf Extension Specialist, University of Kentucky Sports Turf Research.

University of Georgia, Athens

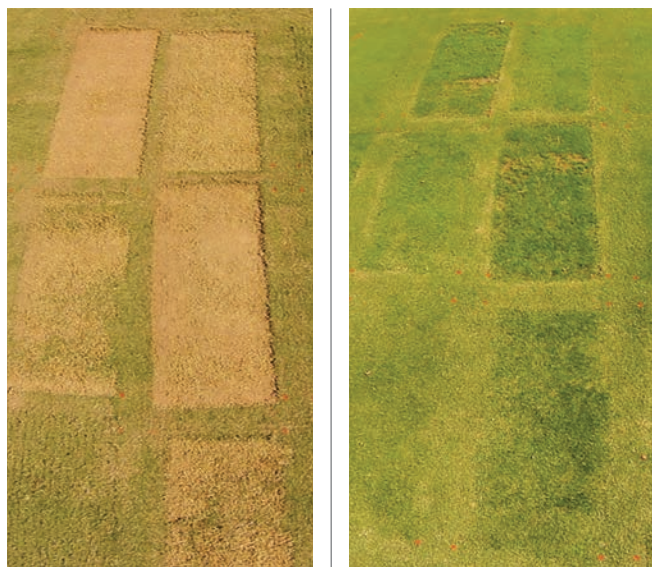
Several research trials that may be of interest to sports turf managers are currently being conducted at the University of Georgia. The following projects are at various stages of completion:

Comparison of Handheld vs. Mobile Devices to Assess Athletic Fields. Performance testing of natural turfgrass sports fields requires sampling to obtain information on surface properties (e.g. soil moisture, soil compaction, surface hardness, and turfgrass vigor). Researchers and field managers may conduct performance testing in order to evaluate or develop standards for these properties to improve player safety and field playability. Although handheld devices are more abundant, mobile devices are available for field assessment. Results from this research will be appearing in an upcoming issue of the academic journal *HortScience*.

Creating Site Specific Management Units for Athletic Fields. Sports turf managers often apply cultural practices to entire fields or complexes without taking into consideration the variability that may exist with respect to soil moisture, soil compaction, etc. Performance testing provides the end user with maps that depict the variability of a given attribute within and across fields. These maps can be used to break areas up into smaller site specific management units, allowing the manager to better focus input application and foster uniform turfgrass growth/health. Results from this research are currently being evaluated and written for publication.

Spatial Interaction between Field Surface Properties and Rooting Dynamics. Field surface properties such as soil moisture, soil compaction, surface hardness, etc. can influence one another; therefore, having a profound impact on the rooting dynamics of sports fields. Mapping the agronomic conditions of athletic fields while simultaneously taking soil samples at various depths may further the understanding of these interactions. Results from this research are currently being evaluated and written for publication.

Correlation between Athletic Field Surface Properties and Player Injuries. Sports fields play a greater role in athlete performance than most people believe. Performance testing on a regular basis along with techniques to simultaneously track player injuries and severity may provide insight into the specific field conditions or field locations that may increase potential for athlete injuries. Our group, in conjunction with several kinesiologists, is in the second year of evaluating such research across men and women's rugby and ultimate Frisbee.



Pre-planting techniques for establishing perennial ryegrass overseeding. Image on the left is day of planting and image on the right is 3 weeks after planting. Treatments on both images from right to left are: 1" deep fraze mow, 1/2" deep fraze mow, 1/4" deep fraze mow, vertical mow, no pre-plant treatment.

Athlete Perception of Field Quality and Injury Risk.

Qualitative research (i.e. interviews) is a way to understand social phenomena in a natural setting by focusing on the experiences and views of the participants, which cannot be explained with quantitative research (e.g. anything measurable). Recognizing athletes' experiences, views, and opinions on field properties may be fundamental in the development of natural turfgrass sports field research and management. This study involves conducting "walking interviews" (with men and women rugby and ultimate Frisbee athletes) to obtain site-specific opinions of surface properties (e.g. ground cover, surface hardness, traction, etc.) and how changes within the field influence playability and safety. All interviews take place on the actual fields and locations of participant responses are geo-referenced and compared to maps of field properties. This research is currently ongoing and will be completed in the fall of 2016.

Effect of Irrigation Timing and Dry down on Surface

Hardness and Soil Compaction. Athletic turf managers often debate whether to reduce or even avoid irrigation practices prior to sporting events. The length of dry down following irrigation may have a significant impact on surface hardness and soil compaction, which can affect field performance and player safety. Results from this research are currently being evaluated and submitted for publication.

Effect of Site Specific Cultivation on Soil Compaction and Rooting Characteristics. Cultural practices are often conducted over entire sports fields without taking into consideration the spatial variability of soil characteristics. Site-specific cultivation focuses on heavily compacted regions of athletic fields in an attempt to increase turfgrass rooting and create more uniform soil structure. This research is currently being conducted over multiple years.

Long-term Effects of Open Spoon Aerification on Soil

Compaction of Athletic Fields. Although deemed less effective than vertically operated hollow tine aerifiers, 47% of sports turf managers surveyed in 2013 (total of 218) in the United States indicated using open spoon aerification as a form of cultivation used on their fields. *In situ* evaluation of aerification regimes may provide the most applicable results; therefore, our research evaluated the 2-year effect of open spoon aerification timing and frequency on soil compaction, surface hardness, turfgrass vigor, and root mass of community level sports fields. Results from this research have been submitted for publication in an academic journal.

Advances in Thick-cut Sod Production. Sports fields are often resurfaced with thick-cut sod in order to reduce establishment time before play can be resumed. Currently only a few hybrid bermudagrass cultivars are being grown for thick-cut sod production. Upcoming research in our group will investigate sod production of additional bermudagrass cultivars/turfgrass species, alternative establishment methods, and enhanced installation techniques.

Compiled by Gerald Henry, PhD, Associate Professor - Environmental Turfgrass Science

Athletic Association Endowed Professor. Other members of the environmental turfgrass science team include: Graduate Research Assistant Chase Straw; Graduate Research Assistant Rebecca Grubbs; and Research Associate Kevin Tucker.

Rutgers University

These sports field and grounds research projects are based at Rutgers University's horticultural farm No. 2, North Brunswick, NJ.

2011 National Turfgrass Evaluation Program (NTEP)

Kentucky bluegrass Test. The 2011 NTEP Kentucky bluegrass Test was seeded in October 2011 to assess the tolerance of entries to wear applied with the Rutgers Wear Simulator (RWS) and trampling caused by the Cady Traffic Simulator (CTS). Machine passes were applied in separate RWS and CTS strips to all entries during three seasons (spring, summer, and autumn) during 2012-16. Plots were visually evaluated at the conclusion of each season and images of each plot were captured and subjected to digital image analysis of green cover.

Analysis of digital images and visual ratings indicated that the RWS caused more damage to Kentucky bluegrass compared to the CTS in each season during 2015. Digital image analysis was unable to differentiate between CTS-treated and non-trafficked Kentucky bluegrass at the conclusion of spring, summer, and autumn 2015.

This research quantifies the strengths and weaknesses of machines used to apply traffic to turfgrass so that varieties can be better evaluated for use on highly trafficked turfs such as sports fields. For complete study results, see www.ntep.org

2012 NTEP Tall Fescue Test.

The 2012 NTEP Tall Fescue Test was established to assess entry response to the combined stresses applied by the RWS and CTS. Previous research at Rutgers determined that combining the RWS and CTS was an effective strategy to apply to traffic stress to turfgrass. Machine passes were applied to entries during spring, summer, and autumn. Plots were evaluated similar to the 2011 NTEP Kentucky bluegrass Test.

Analysis of digital images (green cover) provided confounding results compared to visual assessments generated by experienced human evaluators during 2015. Visual ratings tended to provide more differences among entries compared to digital image analysis. Subtle differences in turf density, undetectable by digital image analysis, were the source of discrepancies between visual and digital analysis. Tall fescue entry responses to traffic can be found at www.ntep.org and in the Rutgers Turfgrass Proceedings (<http://turf.rutgers.edu/research/reports/>).

Performance of cool-season seed blends and mixtures under low maintenance. There is an increasing demand for



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turfgrasses that are well adapted to fewer irrigation, fertilization and pesticide inputs, particularly for general grounds and sports fields where few resources are allocated, both turfs that sports turf managers are frequently required to maintain. A research trial was established at in autumn 2011 with the objective of evaluating the performance of cool-season turfgrass blends and mixtures under moderate fertilization and limited irrigation and pesticide inputs.

During 2013-15, the test was mowed approximately once per week with a rotary mower at 2.5 inches; mowing was withheld from the test whenever the trial exhibited drought stress. Irrigation was applied once to the trial during 2013, withheld completely from the trial in 2014, and during 2015 was withheld until September. The trial was thoroughly irrigated in September 2015 to encourage recovery from severe drought stress. Annual nitrogen quantities were 1.7, 2.1, and 1.8 lbs. N per 1000 ft² during 2013, 2014, and 2015, respectively.

Entries containing perennial ryegrass exhibited better than expected turf quality during 2014; however, many of these entries exhibited a dramatic decline in turf quality during above average air temperatures and below average rainfall in July and August 2015.

Better turf quality was exhibited by entries containing tall fescue during this stress period in 2015. In large part, this was due to the ability of these plots to maintain greater and more uniform turf cover compared to other plots. Tall fescue has long been recognized for its very good high-temperature and drought tolerance, better insect tolerance, and ability to persist under low fertility. Full research results can be found in the Rutgers Turfgrass Proceedings (<http://turf.rutgers.edu/research/reports/>).

Fine Fescue Research. Fine fescues (hard fescue, strong creeping red fescue, slender creeping red fescue, Chewings fescue, sheep fescue, and blue x hard fescue) can provide quality surfaces for general grounds where limited water, fertilizer, and mowing inputs are provided. Traditionally, fine fescues are considered to have minimal traffic tolerance. Research at Rutgers University is assessing the wear and traffic tolerance of these fine fescue species. The goal is to improve the ability of fine fescues to tolerate and recover from traffic.

Ten fine fescue entries were seeded in September 2012 for the purpose of comparing the effects of RWS and CTS operation on fine fescues during spring, summer, and autumn beginning in autumn 2013 and concluding in summer 2016. Year 1 and 2 results indicated that fine fescue were more tolerant the trampling traffic imparted by the CTS compared to abrasive traffic caused by the RWS. The abrasive traffic caused more severe leaf bruising during autumn and summer compared to traffic during spring.

The same ten fine fescue entries were established in September 2012 to assess the effects of the RWS in spring, summer, and autumn. The RWS was applied in separate seasonal strips during spring (April to June), summer (July to August) and autumn (September to November) during autumn

2013 through spring 2016. Results indicate that wear was more damaging to 1-yr-old (autumn 2013) fine fescues compared to more mature plots.

2014 NTEP FINE FESCUE TEST

Seeded in 2014, the 2014 NTEP Fine Fescue Test was established to assess the tolerance of sixteen strong creeping red fescue entries, twelve hard fescues, ten Chewings fescue entries, three slender creeping red fescues, and one sheep fescue entry. Wear will be applied using the RWS and commencing in autumn 2016 (September to November) with a seasonal wear schedule to follow: spring (April to June) and summer (July to August). Plots will be evaluated similar to other NTEP wear/traffic tests at Rutgers University Hort. Farm No. 2.


Using herbicides and perennial ryegrass to renovate turf dominated by annual bluegrass. Annual bluegrass is a highly opportunistic weed that frequently invades sports turfs. Among cool-season turfgrasses, perennial ryegrass is effective when overseeded into existing turfs given its rapid germination and aggressive establishment. A research study was initiated on a mature stand of annual bluegrass in September 2015 to assess the effectiveness of herbicide programs designed to suppress annual bluegrass in turf overseeded with perennial ryegrass.

Programs involved applications of glyphosate (Roundup PRO), amicarbazone (Xonerate), mesotrione (Tenacity), and ethofumesate (Prograss) applied during September through December 2015. 'Manhattan 5 GLR' perennial ryegrass was slit-seeded on September 14, 2015.

All herbicide programs increased the establishment of perennial ryegrass. Glyphosate (applied September 4, 2015) followed by application of ethofumesate on October 3, November 3, and December 4, 2015 resulted in the greatest perennial ryegrass population (91.3%) when evaluated on December 22, 2015. Plot evaluation continued during spring and summer 2016. The trial will be repeated during autumn 2016 and will be evaluated through autumn 2017.

Compiled by Bradley S. Park, Sports Turf Research & Education Coordinator; personnel responsible for conducting sports field and grounds research at Rutgers Hort. Farm #2 include: Eric Chen, Graduate Student; Joe Clark, Research Farm Supervisor; Dr. James Murphy, Extension Specialist in Turfgrass Management; Dr. William A. Meyer, Associate Director, Center for Turfgrass Science; and Dr. Bruce Clarke, Director, Center for Turfgrass Science.

Research is sponsored by: Rutgers Center for Turfgrass Science; New Jersey Agricultural Experiment Station; National Turfgrass Evaluation Program; United States Department of Agriculture Specialty Crops Research Initiative; and the Sports Field Managers Association of New Jersey.

For additional information, please contact Brad Park at park@aesop.rutgers.edu or Dr. James Murphy at murphy@aesop.rutgers.edu. 

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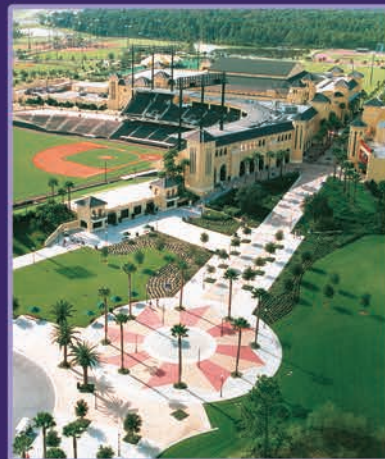
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150,000 EXPECTED TO WITNESS HISTORIC GAME AT BRISTOL MOTOR SPEEDWAY

By the time you read this we'll know who won the Pilot Flying J Battle at Bristol game between the Volunteers of the University of Tennessee and the Hokies of Virginia Tech, played in the infield of the Bristol Motor Speedway (BMS). Attendance was expected to surpass 150,000.

Sports Turf Managers Association member Sports Construction Management Inc., (SCM) Lexington, NC consulted on building the AstroTurf field in the infield of the famous racetrack in Bristol, TN, and STMA member Wes Howard from SCM led a team that installed the field, along with an install crew provided by AstroTurf. SCM is the Mid-Atlantic distributor for AstroTurf.

Joey Alexander, CEO of Sports Construction Management, told *SportsTurf* that his company was "thrilled to be involved in this historic experience. We were asked to consult with the general contractor who built the field since he had never done one before."

Bristol Motor Speedway owner Bruton Smith hired local contractor Chad Baker to build the field; Baker has done most of the work at the Speedway over the years.

"There were no hitches in the construction," Alexander said. "It truly was a heroic effort, given there were only 21 days between the last night race at Bristol and game day." Alexander credited Mitchell Truban, director of construction for AstroTurf, Adam Rust, BMS senior purchasing director, and local general contractor Chad Baker, president of Baker's Construction Services, for working well together to get the job done.

Alexander said he didn't think using natural turf was ever considered given the time frame; "sod would have been a lot more risky," he said.

He said that all the field materials will be rolled up after the game and either re-installed elsewhere or stored on BMS property for re-use there. The base materials also will be kept for later use on BMS property or elsewhere, he said.

DETAILS ON THE BASE

The following information on the field's base construction is from an article written by Robert Sorrell of the *Bristol Herald Courier*.

"The first step in building up the field is installing a heavy-duty fabric barrier. The speedway's infield is normally slightly concave, allowing water to drain to the middle," [BMS general manager Jerry] Caldwell said. "A football field must drain to the edges.

"So it kind of has that crest in the middle," Caldwell said. "We have to raise the middle of it to get it that high so it will

drain on the edge."

To prevent tons of material from disappearing, the barrier must first be rolled over the infield.

Once that's in place, Baker's Construction Services, of Bluff City, TN will bring in 450 truckloads of rock and manufactured sand for the field base, which will weigh in at more than 10,600 tons.

"We'll be placing the material with a dozer and a grader and run a robotic total station," Baker said.

They'll use Universal Total Station UTS site-measurement technology provided by SITECH Mid-South. Crews will place and compact the field base. When complete, the base will rise to a height of more than 3 feet and will be measured in 10 different locations, three times each, before being approved for use.

At the same time, T&B Equipment of Ashland, VA, which specializes in event seating, will build the first series of risers. Overall, multiple seating companies will add more than 5,000 seats to the infield.

Builder J.A. Street and Associates, of Blountville, Tennessee, will also be on site, clearing out the Goodyear Tire Building, the lower level of the Infield Media Center, and Victory Lane areas for transformation into team and referee locker rooms and meeting space.

By Thursday, Aug. 25, according to a construction schedule, tons of rock and sand will be in place for inspection and ready for AstroTurf to install the field green.

The company will begin that Thursday to complete a grid survey, to make sure it's NCAA-compliant.

"We'll work with him [Baker] on that last day doing the final touches on it and we'll be putting up the field goal posts," said Mitchell Truban, director of construction at AstroTurf. "Chad has already poured some concrete pads for us and they're custom field goal posts that are, most of them are 10-foot high, this is 14-foot high, because we have to go down a lot more than normally. It's unique for this field."

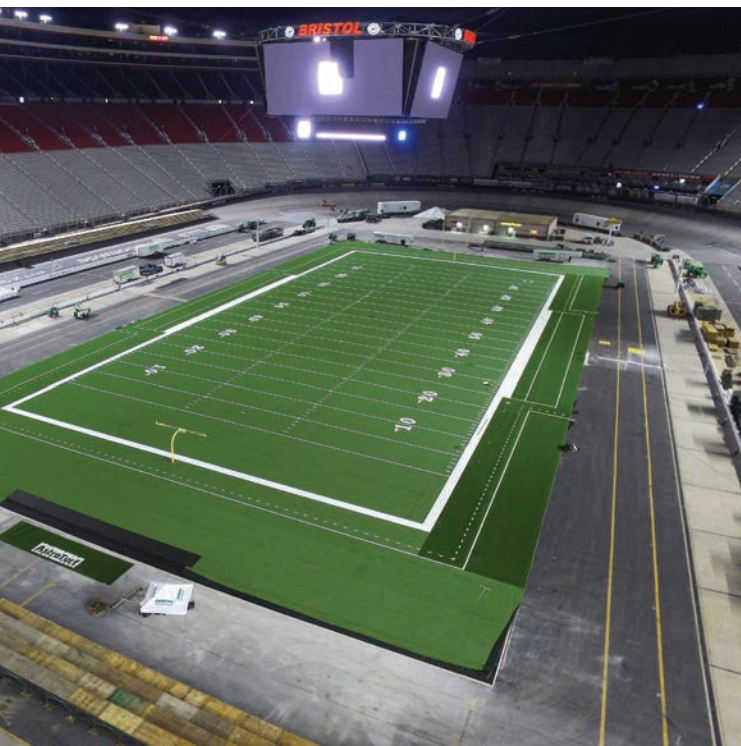
The field goal posts will be placed as Baker's crew completes the stone drainage base.

Once the grid survey is signed off, the turf will be installed, Truban said.

AstroTurf will employ its 3D3 playing surface, which boasts a shorter, denser turf carpet that provides more fiber and requires less infill, Truban said.

The field also features the RootZone infill stabilization system, a texturized layer of fiber that curls down into the surface, creating a net-like matrix that stabilizes infill. This reduces "splash" during play and provides grass-like





traction for players.

Many pre-produced field components, including the sidelines, hashes and yard markers, will be installed over a 2-day period, readying the field for the final touches from university artists and [STMA member] World Class Paints of Leland, MI.

Other components to be added include play clocks. Concession stands and restrooms will be installed on the track surface for all of the sitting areas in place on the infield.

Final touches and some more heavy lifting will take place during the final week before the game.

On Sunday, Sept. 4, Virginia Tech's Casey Underwood and Darren Seybold from the University of Tennessee will be on hand to stencil and paint end zones and team logos. World Class Paint will supply the materials for crews to christen the 50-yard line with the game logo.

One week later, East Tennessee State University and Western Carolina University will play on the field. Once that game's over, crews will begin transforming the football stadium back into a racetrack.

Other venues around the world will be watching the speedway as it transforms the coliseum into a football venue. Caldwell said he's heard from a number of officials asking how it's being done. **ST**



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Early evaluation of paint's influence on photosynthesis in a controlled environment.

TURFGRASS RESPONSE TO FIELD PAINT

■ BY DR. GRADY MILLER, DREW PINNIX,
AND DR. CASEY REYNOLDS

Athletic fields are defined by lines and enhanced with logos. This makes painting a ritual repeated every week during the playing season for thousands of fields worldwide. Athletic paints are formulated with the intent that they will not cause harm to the turfgrass when properly applied, yet most sports turf managers have experienced some level of paint-induced damage during their career. While there is still a lot to learn about paints and painting, North Carolina State University has been testing products and application methods for several years to better understand why paints damage turfgrasses.

Before discussing paint and how it can influence turfgrass health, it may be helpful to understand a few components of paint. Athletic paints are very similar to common household paints in basic ingredients. They are generally made of four components: binder, solvent, pigment, and additives. The binder (or resin) is a film-forming component of paint that binds pigments together and allows them to adhere to a surface. The solvent in turfgrass paint is water. The pigment is an organic or inorganic particle that provides color. Additives may be surfactants, thickeners, emulsifiers, etc. that give paint particular properties that make it easier to handle, mix and extend shelf life. Athletic paints have less volatile components than household paints and consequently there is no need for

anti-microbial or algacide components.

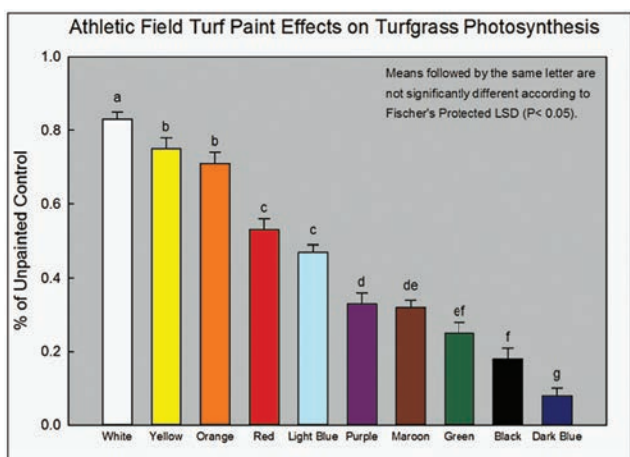
The opacity of the pigment in the paint that covers the turfgrass' surface alters the normal microclimate around the plant. Although research has shown that paint may positively influence turfgrass, it routinely has the opposite effect. After repeated applications of athletic paint, we typically see a decrease in turfgrass quality, or in extreme cases, complete death. A positive influence has been noted during cooler, sunny weather when a paint-darkened surface can result in heating of the turfgrass plant, which may produce limited growth enhancement. However, in most situations paint provides an additional stress. When considering the "quality" of a turfgrass, we look at the combination of turfgrass color, cover, and density. The decrease in quality that is seen after multiple applications of athletic field paint is mostly due to a decrease in turfgrass stand density as the frequency of athletic paint applications increase.

Like most plants, turfgrasses are unable to survive without light. Light is emitted from the sun through wavelengths of particles known as photons. There is a broad range of wavelengths that determine the energy state of light that is emitted from the sun but we are only interested in photosynthetically active radiation (PAR), which is the group of wavelengths (400-700 nm) that is visible to the human eye. Most importantly, PAR is also the range of light that is used by plants. PAR is separated into three different colors of light. The 400-500nm range is considered to be blue light, the 500-600nm range is green light, and the 600-700nm range is red light.

So what happens when light strikes the leaf of a turfgrass plant? Light that comes in contact with the leaf surface is transmitted, absorbed, or reflected. From a plant perspective, the best scenario is to maximize the amount of light that is transmitted through the paint since that will be directly used by chlorophyll. PAR is separated into these different colors



Field day demonstration of colors used in paint research using the Atlantic Coast Conference school colors.



The relative influence of paint color on turfgrass photosynthesis.

because when light strikes a chlorophyll molecule, it reflects these colors at their respective range of wavelengths. This is why when we look at a turfgrass plant we see the color green. Reflected light may be partially transmitted as well as it can be reflected to other areas of the turfgrass canopy and transmitted there. Absorbed by the paint, light can provide heat, but is largely lost for photosynthesis.

Turfgrasses use PAR to produce carbohydrates that provide energy and food storage compounds. The reaction that produces these carbohydrates is known as photosynthesis. For this light driven process to occur, plants exchange water vapor for carbon dioxide through transpiration. Photons of light excite chlorophyll molecules that are housed in the chloroplast of plants and as a result, initiate a chain of reactions that enable the turfgrass plant to capture carbon dioxide and convert it into usable forms of energy such as carbohydrates.

RESEARCH TIME!

Before our research it was not well known how paint colors would influence light reflection, transmission, and absorbance.

Our research indicated that lighter colors such as orange, yellow and white could transmit between 12 and 18% of available PAR while reflecting 47 to 93%. Darker colors such as blue, green, maroon, purple, and black transmitted and reflected much less (0 to 8%) while absorbing up to 95% of PAR. Our research found that much of the difference was due to the innate properties of the pigment color and part was due to the percent of solids by volume. So the formulation and color can impact light transmission.

A good test of these transmission results was to measure total canopy photosynthesis. This would account for the high degree of reflected light for a light-colored paint (e.g., white paint) that may still be used in photosynthesis despite a poor transmission percentage. As a percentage, leaves that were painted white maintained approximately 80% of the photosynthesis of the non-painted. Yellow and orange was about 70%; whereas red was about mid-50s. Purple and maroon were about 40%. Dark blue and black maintained less than 20% of the non-painted. So, the shading effect of paint by color turned out to be a very real and significant limitation to the plant.

As mentioned earlier, in addition to color, dilution can also play a role in total canopy photosynthesis. When comparing both white and red athletic paint (diluted and non-diluted) we found that the non-diluted formulation can have a profound effect. White and red non-diluted paint decreased total canopy photosynthesis by 25% more than when it was diluted using a 1 part paint:1 part water dilution. Red, non-diluted paint decreased total canopy photosynthesis by 75%. The reduction in pigment per unit area reduces the opacity so that more light can be transmitted to the chlorophyll. While this may be beneficial to photosynthesis and plant health, diluting paint with water often reduces the brightness, coverage, longevity, and quality of paint applications. As a result, the need for brightness and uniformity must be balanced against the effects

on plant health and may vary based on a particular setting.

Without adequate photosynthesis the plant cannot maintain necessary metabolic functions. Athletic paint coating the pores (stomata) on turfgrass leaf surfaces compounds the issue. If the plant cannot freely lose water and take in carbon dioxide from these pores, then canopy temperatures can rise to become an additional stressor. The color of athletic paint can have a great effect on turfgrass transpiration. In unpainted bermudagrass, water loss increases with canopy temperatures, but it was just the opposite with painted leaves. We typically found that the darker colors affected transpiration to a larger extent. Turfgrass coated with lighter colors such as white, yellow, and orange had similar but slightly lower transpiration rates than the unpainted turfgrass. The darker colors including red, blue, and black showed much higher canopy temperatures and much lower transpiration rates. These results mirrored what we saw with total canopy photosynthesis in that the darker colored athletic paints have a greater negative effect on turfgrass physiological processes.

SHADING NOT ALL BAD

It is important to note that shading by paint pigments may not always be detrimental. Cool-season grasses grown in northern climates often do not use all of the light that is possible for photosynthesis. For example, ryegrasses have a relatively low light requirement and the daily light integral on athletic fields with little to no shade may be sufficient to drive adequate growth, even when accounting for shading effects by paint. Furthermore, regular use of the field and mowing may remove some of the paint from the leaf's surface. The plant will also generate new growth that is more efficient at utilizing the light. Of course, the next coat of paint may soon follow the emergence of this new growth. The result is that chronic paint use, especially darker colors, is even more damaging.

We looked at application rates and timing in relation to mowing. The results indicate that earlier removal of the paint is beneficial to the plant. We found that one less mowing during the week provided faster recovery. Although a higher frequency of mowing would suggest that more of the paint is being removed from the turfgrass leaf blade, the area of the plant that is not coated with paint (new growth) is also being mown off. Allowing new tissue that is not coated with paint an extra day to expand will increase the leaf area that is able to actively photosynthesize and as a result, promote faster recovery. The timing of athletic paint application had a greater effect on the quality of the painted surface compared to recovery of the turfgrass over time. As expected, earlier applications of paint were of reduced quality compared to applications made later in the week (closer to game day). Furthermore, we found that paint applications made earlier in the week may minimally increase turfgrass recovery, but not to the degree that would merit sacrificing the overall appearance of the paint application. As mentioned before, an athletic field manager may need to balance plant health and quality of paint appearance.



School-painted logo at football stadium.

Also some limited work on binder concentrations looked very promising for alternative formulations that would be less damaging. Remember that binder is the ingredient in paint formulations that is responsible for the paint's ability to adhere to the leaf blade, so manipulating the concentration of binder can affect how long the paint will "stick" around. One issue that must be addressed when looking at alternative formulations in terms of binder concentration is the susceptibility of the paint to transfer onto an absorbent material, i.e., an athlete's uniform. This can be very problematic as this may result in increased staining of uniforms. The severity of this issue may be anywhere from minor laundry matter or as severe as a need for total uniform replacement.

The painting of athletic fields is a ritual that has evolved tremendously as sports have become more and more popular over the years. Not only are athletic paints needed for boundary lines and other field markings for playability of the game, paints are also needed for advertising logos and brand marketing. Logos may not be required for successful completion of a sporting event, but at the time of high-definition television and major companies seizing opportunities to market their brand, athletic field painting will continue to be a major part of athletic field management. We have identified some of the underlying negative effects that athletic field paint has on natural turfgrass surfaces. While there is not much likelihood of teams changing their colors to help minimize turfgrass decline, there are ways to help combat the harmful effects.

This article is reprinted with permission from Sports Turf Canada; it first appeared in the Summer 2016 issue of their Sports Turf Manager publication.

Grady L. Miller, PhD, is professor and Extension turf specialist, Crop and Soil Sciences Department, North Carolina State University; Drew Pinnix is a graduate student in crop science at NC State; and Casey Reynolds, PhD, is an assistant professor and Extension turfgrass specialist, Texas A&M University. ST

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Missing turf and depression

Turfgrass area: Lawn behind maintenance shop

Location: Northern United States

Grass variety: Bluegrass mix



BACKGROUND ILLUSTRATION COURTESY OF ISTOCKPHOTO.COM



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EVALUATION OF POLYMER-COATED SANDS TO CONSERVE WATER

■ BY DR. JOEY YOUNG

Water is a precious resource around the world but when you live in a semiarid environment, water becomes a bit more precious. From residential landscapes to our athletic fields, it can be a challenge to manage turf under these environmental conditions. Many of our athletic fields in the West Texas region are artificial, and I believe one of the reasons may be the challenge of trying to provide safe and aesthetically pleasing fields during the season. With these challenges in mind, we have been establishing a number of research studies to evaluate newer bermudagrass cultivars for sports field use in this transition zone environment and develop techniques that can be used to save water and maintain acceptable turf quality.

A previous study nearing completion at Texas Tech evaluated numerous residential water conserving products applied to TifSport hybrid bermudagrass managed at 0.5 inch mowing height with and without core aerification. This study was designed to be a worst-case scenario by all means because after the initial product applications were made in mid-June, the irrigation was turned off completely until follow-up applications of some products needed to be made.

The study area received reasonable rainfall the first month of the trial through the first week of July; however, no more rain came until the middle of September. Under this significant water deficit stress situation, one of the products that successfully extended green cover compared to untreated control treatments was AquaSmart polymer-coated sand. In contrast to our hypothesis, data collected last year indicated that aerification before application of AquaSmart did not alter the effectiveness of the application. However, applying AquaSmart at a 4:1 ratio (sand:AquaSmart) provided significantly better color and green cover compared to untreated control treatments for 4-5 weeks with no irrigation or rainfall.

Some of the biggest benefits to this application for a sports field manager are the extended life of the product in the soil and the potential to apply a mixture of polymer-coated sand in your typical topdressing practices. A single application of mix was applied in mid-June last year and incorporated into the canopy using brooms for our small plot work. The abrasive actions of getting the sand into the canopy resulted in poor visual turf quality, color, and green cover for 1-2 weeks after application, but darker green color was evident following recovery in 2-3 weeks after application. No other applications were made throughout the year, but the significance of drought stress with

no irrigation or rain in July and August resulted in a sharp decline in turf quality, color, and green cover that remained statistically similar to untreated control treatments for the remainder of the study.

Following the first year of data collection, we believe the polymer-coated sands residing around the crown of the plant (aerified or non-aerified) provided greater hydration to the growing point helping maintain color for a longer period than untreated control treatments. Ultimately, soil moisture levels at 1.5 and 3-inch depths were never significantly different with any of our treatments, meaning something other than available soil moisture had to be providing the visual benefits observed. We are conducting this same research again this year and look to publish results from the study early next year.

OTHER STUDIES

The success and preliminary conclusions of this first research trial led to other ideas we wanted to evaluate. As previously mentioned, there are numerous artificial athletic fields throughout the Panhandle of Texas. I believe one of the reasons for this is the challenge associated with growing bermudagrasses in this short-seasoned transition zone area. The cold and frost can come early and also surprise us with a late freeze well into the spring season resulting in a meager growing season. Bermudagrass needs and prefers a long growing period before resting during the winter months, so we wanted to try and establish some of the newest bermudagrass cultivars that have been demonstrated to be effective sports turf selections in other transition zone areas within the US.

We recently obtained and are establishing five bermudagrass cultivars: Tifway 419, Celebration, Riviera (seeded), NorthBridge, and Latitude 36. We will also be establishing the University of Georgia's newest release, TifTuf, next spring in the area. In addition to evaluating these grasses post-establishment, we were awarded funding from Texas A&M to evaluate the use of AquaSmart as a potential method to reduce irrigation requirements to establish sprigs or seeded bermudagrass.

We established the grasses under three irrigation zones to provide different levels of water. Control irrigation runs for 15 minutes two times per day 7 days per week; moderate irrigation runs 20 minutes one time per day 6 days per week, and the lowest irrigation runs for 15 minutes 4 days per week. After placing sprigs and seed of the various



Topdressing of sand: AquaSmart mix before brushing into the turf canopy with push brooms. All the images are from planting date number 2 in August.



AquaSmart applied at 0, 40, or 80 lbs./1,000 sq. ft. following sprigging of bermudagrass cultivars at the August planting date.

bermudagrass cultivars in the area, AquaSmart was applied to strips of the grass at 0, 40, or 80 lbs./1,000 square feet using a 3-foot drop spreader. The fine particle size of the polymer-coated sand being dry at application makes the direct application of the product through a drop spreader very simple and effective.

This trial was established at two separate planting dates, the first week of July and the first week of August last summer. AquaSmart treatments were applied the day of sprigging or seeding along with a heavy topdressing of USGA specification sand to cover sprigs and seed to prevent desiccation. Irrigation treatments were initiated following sand topdressing and remain in place since sprigging. There was no rainfall following the first planting date, but we had lots of trouble with weed infestation in the initial planting area that made rating the growth of sprigs and seed difficult.

The seeded variety grew in very well and is currently 100% covered with grass at the two higher irrigation levels, but the lowest irrigation level still lacks full

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Actual sequence in same location

November: Season ended with less than 10% of turf cover.

December: After seeding and fertilizing, active turf growth even with temperatures below freezing.

Spring: Covers have been removed. (Uncovered turf still dormant)

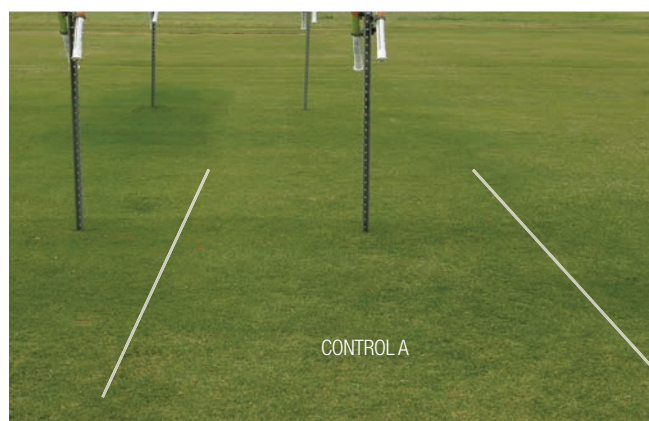
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The variations between AquaSmart and control treatments from a green color perspective.


cover of grass. The sprigged plots are growing in effectively; however, they will require much more growth to completely fill the area. It is difficult to determine if the AquaSmart treatments are providing benefits to establish the turf more quickly with reduced irrigation, but hopefully the weed pressure will be managed more effectively with our second planting date to more effectively evaluate the potential benefits.

An application of pre-emerge herbicide (oxidiazon) to non-seeded plots will hopefully limit weed pressure and provide improved data collection. As of 2 weeks post planting, there was limited evidence of turf growth from the second planting date, but we should start seeing some new growth very soon from these treatments.

The ultimate goal and potential benefit of this research would be to determine if the polymer-coated sands could maintain improved moisture around sprigs or seeded bermudagrasses to reduce the irrigation requirements to establish grasses on an athletic field. Turf researchers have successfully demonstrated effective management practices and products that can reduce the water requirements of established turf species and cultivars;

however, limited research has proven effective techniques to reduce water requirements when establishing turf. If this product can effectively reduce water needs at establishment, this could be a major breakthrough for sports field managers undergoing renovations or overseeding practices in the spring.

There are a number of companies that provided products for us to conduct this research that should be acknowledged. RainBird provided new irrigation valves, heads, and a controller for us to alter the irrigation system into three independent zones. Sod Solutions provided sod that was cut into sprigs, and Johnston Seed Company provide Riviera bermudagrass. AquaSmart donated a large quantity of their product and additional financial support was provided through Texas A&M's Turf Research, Education, and Extension Endowment.

Joseph Young, PhD, is an assistant professor in the Department of Plant and Soil Sciences, Texas Tech University. Joey also serves as the Technical Editor for this magazine. He can be reached at joey.young@ttu.edu. 

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& The American Academy of Orthopaedic Surgeons (www.aaos.org)

THINK YOU CAN PASS THE CERTIFIED FIELD BUILDER EXAM?

■ BY MARY HELEN SPRECHER

How's your sports field construction knowledge?

No, that wasn't a trick question, and it wasn't meant to trip you up. So what's the answer? Does your understanding of fields cover everything from project planning and administration to construction to marking to maintenance? Does it include an understanding of the latest construction techniques? Do you know soils, drainage, base, sub-base and more? How much do you know about playing surfaces and dimensions?

If you're pretty well-versed in all of the above, then here's another question: Do you think your knowledge base is good enough for you to become certified as one of the American Sports Builders Association's (ASBA) Certified Field Builders?

To review, the certification program is voluntary. It was developed by the ASBA to help raise professional standards and to improve the practice of field construction. Those who are interested in obtaining the certification must do so by passing a comprehensive exam on field construction and maintenance and by fulfilling prescribed standards of experience, have demonstrated a high level of expertise in field construction.

ASBA's certification program for builders of sports fields takes three forms, and those interested can select the one that best meets their needs:

■ **Certified Field Builder (CFB):** Covers all aspects of both natural and synthetic fields

■ **Certified Field Builder-Natural (CFB-N):** Covers all aspects of grass fields

■ **Certified Field Builder-Synthetic (CFB-S):** Covers all aspects of synthetic fields

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APPLICATION PROCESS

The application to take the test allows the prospective test-taker to show his or her eligibility; it is designed to provide a snapshot view for ASBA, illustrating the person's experience in the industry.

For initial certification, field builders must demonstrate 100 eligibility points from the five areas of project planning; project administration; site, sub-grade and base work; field surface marking; and maintenance. Applicants must show work in all five categories.

BACKGROUND READING

While the exam (to be discussed below) is not given open-book style, those taking the test are encouraged to use reading materials to study in advance. One of the key publications is

the ASBA's *Sports Fields: A Construction and Maintenance Manual*, which is available for purchase in both hard copy and electronic form. Prospective test-takers are also encouraged to know the most current rules regarding sports fields as they pertain to various governing bodies, such as the NCAA, NFHS and so on.

CERTIFICATION EXAM

The certification exam is rigorous, and is designed to test an applicant's knowledge. As mentioned previously, the exam is given without the aid of any publications or resource materials, and phones, tablets and other devices may not be used while the exam is being given.

The ASBA website (www.sportsbuilders.org) has a section on certification, as well as a full list of sample questions for the exam. A few follow:

Which of the following would apply to the permit or building code when an application is made for field construction?

1. distance of field from wetland
2. height of proposed lighting system
3. distance from field to property line
4. compass orientation of field

Compaction of an aggregate base is measured by which of the following tests?

- | | |
|--------------------|-------------------|
| A. force reduction | B. sieve analysis |
| C. Marshall method | D. proctor |

The distance from center line to center line of the hashmarks across an NCAA football field is:

- | | |
|--------|--------|
| A. 40' | B. 45' |
| C. 50' | D. 53' |

During a sports field grow-in period, a field builder notices *Poa annua* beginning to grow between sod joints of a sand-based rootzone. Which of the following is the most likely cause for this infestation?

- A. contaminated rootzone material
- B. bird droppings
- C. seed brought in by mowing equipment
- D. laborers having seed on their shoes

Pencils down. Want to know how you did? The ASBA's Field Builder Certification Handbook, which includes these sample questions and others, as well as answers, can be accessed by going to the website and clicking on the Certification tab on the top menu bar. A drop-down menu will allow you to select which type of certification (Tennis, Track or

Field). From there, select "Become a Certified Builder" from the list of options, and you'll be able to access the Certification Handbook, which can be downloaded free under the heading, "Are You Interested in Becoming a Certified Field Builder?"

Note: All informational materials on the website are free; however, applying to take the test involves a fee.

The exam may be taken at ASBA's Technical Meeting (in Dec.) and Winter Meeting (Feb.) as well as at the STMA Conference (Jan.) and the Synthetic Turf Council Meeting (Mar.). It can also be taken by appointment at ASBA headquarters in Maryland. In all cases, those who wish to take the exam need to have successfully completed the application showing eligibility, paid a required fee, and made arrangements to sit for the exam.

A passing score on the exam allows an individual to use the appropriate designation (CFB, CFB-N or CFB-S) according to ASBA's policies. (For example, certification is held by the individual, not the company he or she works for; therefore, should the company wish to promote the certification, they may note they have a "Certified Field Builder on staff.")

Certification is renewable by those who hold the credential. In order to recertify, individuals must complete paperwork showing they have been active in the industry, and that they have maintained a specific level of experience in sports field construction.

The certification program provides field builders with an outstanding opportunity to market their strong knowledge base and skill set in an increasingly competitive market, and there have been cases of facility owners requiring the certification credential as a prerequisite for bidding on certain projects.

Think you can pass the test? There's only one way to find out. And for now, it's an easy way. Go online to the ASBA website and check out the rest of the sample questions. Read all the information available, including policies, sample bid language, the application and more. The downloadable Certification Handbook also contains a great deal of information.

And once you've decided you have the skills, it's time to put them to the test.

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

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NEW BIKE PARK INCREASES OPTIONS IN DENVER

City and County of Denver Parks and Recreation wanted something out of the ordinary when the department decided to improve the 80-acre Ruby Hill Park in the southwest part of the city, 10 minutes from downtown. And, thanks to financial donations totaling \$1.5 million from the Walton family and Winter Park Resort, they got it—the new 8-acre Ruby Hill Bike Park.

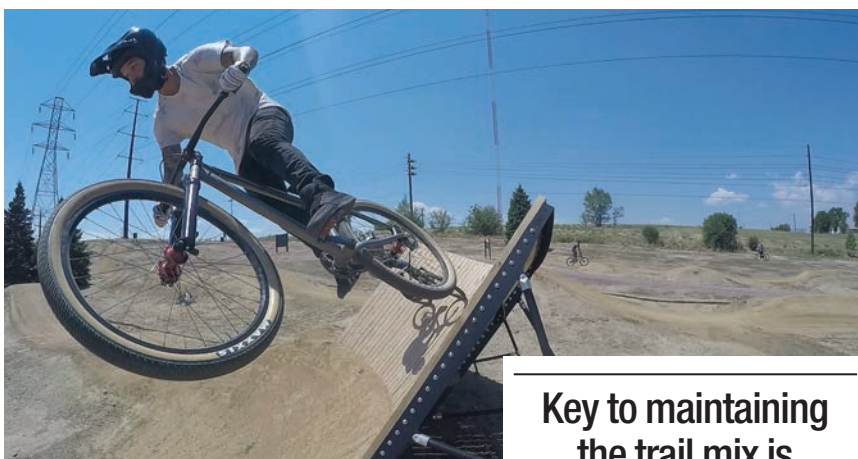
The new facility features a slopestyle course, dirt jumps, pump tracks, and a skills course. The slopestyle course and dirt jumps provide lines of varying difficulty from beginner to advanced, and there is a special expert slopestyle line to challenge and entertain professional riders. Two different sized pump tracks provide the opportunities for all abilities, from small children with pedal-less bicycles to seasoned adult riders. The skills course allows beginner and intermediate riders to

test their riding skills on a variety of features designed to improve balance and bike handling. A 1.7-mile, multi-use natural surface loop trail around the perimeter of Ruby Hill Park is suitable for mountain biking.

There is a 50-foot elevation change from the top of the park to the bottom.

“On opening day we had about 200 riders in and out of the park in 3 hours,” says Deak Brown, the bike park’s operations supervisor. “It is a free public park where no motorized vehicles are allowed. There are 15 riding options and all the trails are one-way; they are designated, like ski runs, for beginners up to expert trails. Any bike will work in the park though of course BMX jumpers work best.”

Progressive Trail Design, a trail building and bike park development company from northwest Arkansas, designed



Key to maintaining the trail mix is keeping the moisture in so it stays solid.

the Ruby Hill facility, which was built by Alpine Bike Parks, out of Canada, with Goodland Construction serving as the general contractor.

“Deak was hired in April to manage the park because he had experience building and operating BMX bike race tracks,” says Abby McNeal CSFM, CPRP, the Southwest District operations supervisor for Ruby Hill Denver Parks, and former president of the Sports Turf Managers Association.

Brown says there are five slopestyle lines, marked from beginner to expert, a skills zone with ladder bridges, stones, etc., a dirt jump for BMXers that is tight and requires more technical skills, and two pump tracks where riders can do numerous laps after pedaling just one time. Done right, riders can use jumps and berms (and gravity) to keep going.

TRAIL MAINTENANCE

“The trail mix has a high clay to sand ratio so that it packs well and absorbs water well,” says Brown. “It is similar to an infield mix in clay content but sandier. Key to maintaining the trail mix is keeping the moisture in so it stays solid.

“The lips and landings can get dry, so there is a full irrigation

system on the trails and a separate full system for the native grass,” he says.

“It can involved a lot of hand work but we also have a plate compactor, and we use tractors with front buckets, too. The trails are durable and can withstand hard rains but torrential rains can wash out the fines.”

Brown says there had been a good response to the park when we spoke, about 3 weeks after the grand opening, with 30-40 people using the park daily.

“We are trying to grow native grass now,” says McNeal. “We seeded last week (mid-August) and expect that when the grass comes in, it will set off the jumps well for great visuals.”

McNeal says the park is “open and free” and that liability issues are similar to skate parks—ride at your own risk during normal park hours (dawn to dusk).

Deak says the park is open all year and he is planning on programming different events at Ruby Hill beginning next year. “This park is for everyone; beginners, kids, parents, experts. We look forward to drawing more and more of the community to Ruby Hill,” he says. **ST**

COST AND PLAYABILITY ANALYSIS OF SYNTHETIC INFILL AND NATURAL GRASS FIELDS IN OREGON

■ BY B.L. DAVISCOURT, A.R. KOWALEWSKI, J.G. LAMBRINOS, B. ELEVELD, AND M. GOULD

There have been several investigations into the costs associated with installing and maintaining synthetic infill and natural turfgrass systems. However, no studies have been in depth enough to include a cycle that goes beyond the warrantee period of a synthetic infill field or include the product of maintenance, number of provided hours of use, in the cost analysis.

The objectives of this study were to compare the cost of installation and maintenance across a 20-year period and establish and compare a cost-per-hour of player use value for natural turfgrass and synthetic infill athletic fields. Field budget, maintenance practice, and hours of use data was collected on five natural grass and five synthetic infill fields from field and maintenance managers and directors, athletic directors, field reservation schedules, and player rosters. The average costs of installation and maintenance for natural grass fields were \$325,000 and \$27,000 while the average costs of installation, maintenance, and resurfacing for synthetic infill fields were \$1,212,000, \$7,000, and \$377,000. Only one of the five natural grass fields was resurfaced or planned to be resurfaced and it cost \$21,600. The average costs of the 20-year budget cycle and of providing a single hour of use for natural grass fields were \$903,000 and \$2.18 while the synthetic infill costs were \$1,902,000 and \$2.15. These results support the idea that synthetic fields are able to be just as cost effective as natural grass fields, despite their larger costs, by providing greater amounts of player-use hours.

During the 1970's and 1980's synthetic turf surfaces started being installed in only a few premier high schools, universities, and professional stadiums. Today the Synthetic Turf Council believes there are currently over 8,000 synthetic multi-use fields in the United States. Part of the reason for this rise in popularity is the ability for the fields to be heavily scheduled with multiple consecutive events with little risk of reducing the longevity of the field. Play on synthetic surfaces is not restricted by weather. There is also belief that the low maintenance associated with synthetic fields balance out the high costs of installation. These assumptions contribute to the popularity of synthetic fields have also sparked a common debate today over the costs associated with natural turfgrass and synthetic infill.

The Turfgrass Resource Center suggests that installation costs of synthetic fields range from \$850,000 to \$1,000,000 at \$7.80 to \$10.75 per sq. ft. They also suggest installation of a sand-based natural grass field ranges from \$350,000 to \$500,000 at \$6.50 to \$7.95 per sq. ft. However, the Sports Turf Managers Association prices synthetic infill systems at \$6.50 to \$11 per sq. ft., and conventional sand-based fields at \$7 to \$10 per sq. ft.

Case studies on annual maintenance would suggest that the amount spent on maintenance varies greatly with the level of athletics being supported. This makes it difficult to compare annual maintenance costs. Previous investigations have found that annual maintenance costs of natural grass systems ranges from \$5,500 to \$48,960. Annual maintenance on synthetic infill systems ranges from \$5,000 to \$29,000.

Resurfacing a synthetic field consists of removal and disposal of old carpet and infill material, additions of new material, and labor. In communication with local contractors the cost of resurfacing a synthetic infill system has been estimated to be \$4.00 per sq. ft. for material and labor. The Synthetic Turf Council ranges the cost of transporting and landfilling the product from \$30,000 to \$60,000 for an 80,000 sq. ft. field (\$0.38 to \$0.75 per sq. ft.). For this study \$.56 sq. ft. (\$45,000/80,000 sq. ft.) was used to calculate disposal of synthetic infill material.

These installation and maintenance costs for synthetic infill and natural turfgrass systems have primarily been provided by industry sources and commodity groups. They were also not expansive enough to include the practice of resurfacing for either natural turfgrass or synthetic infill fields at multiple locations, or for facilities of different athletic levels in the same analysis. Another unexplored aspect in the literature is hours of player use. The question here is, "How many maintenance dollars are being used to provide an hour of use for an individual?"

Therefore, the objectives of this study were to: 1) compare the cost of installation and maintenance across a 20-year period, and 2) establish and compare a cost-per-hour of player use value for natural turfgrass and synthetic infill athletic fields.

MATERIALS AND METHODS

This case study assembles and compares the 20-year life-cycle costs of five natural turfgrass and five synthetic infill fields in the Willamette Valley, OR. Annual player-use data was collected on these fields to create to compare the cost efficiency of the 10 fields over their life cycles. This was accomplished by calculating the cost of providing one hour of use for a single individual [20 year life-cycle cost / (annual hours of individual use * 20 years)]. Surface temperature and hardness data were also collected monthly in 2014-2015 using the testing procedures found in ASTM F1963—10 standard procedures for field hardness testing and using a FieldScout TruFirm and Raytek non-contact thermometer. In order to represent a broader range of maintenance capabilities fields were selected for this study to cover maintenance levels from K-12 schools to the NCAA level.

COST OF INSTALLATION

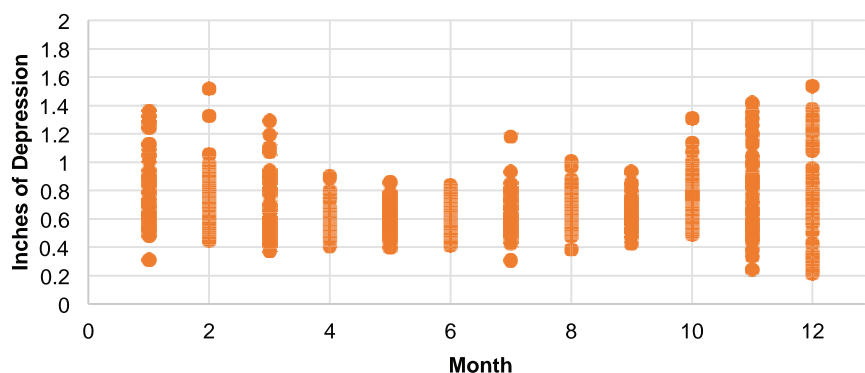
The overall average of natural grass athletic field installation, which includes three sand-based fields and two native soil fields, was \$325,000 with a cost per square foot range of \$1.50-\$6.50. The average cost of installing the five synthetic infill fields was \$1,212,000 with a cost per square foot from \$12.50-\$20.40. By comparison the average cost of natural grass installation was \$887,000 less than the average cost of synthetic field installation. A possible reason for the larger values when compared to the literature is the cost of soil stabilization required for clay soils present at the sites.

COST OF MAINTENANCE

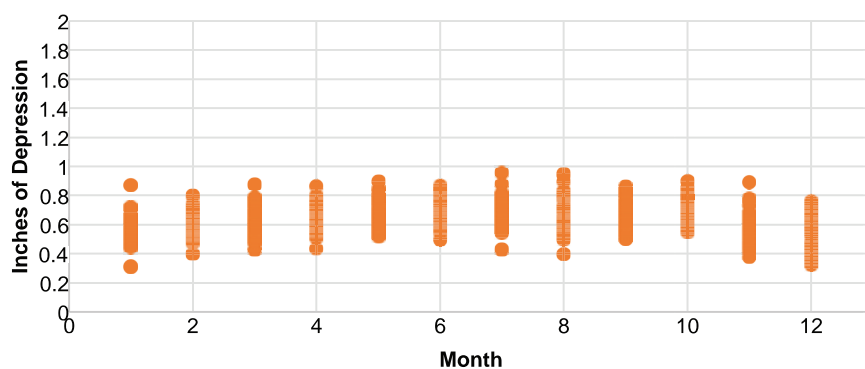
The average cost of a single year of maintenance for five natural grass fields was \$35,000 while the average cost of a single year of maintenance for the 10 synthetic infill fields was \$7,000. The average annual maintenance budget for natural grass fields was almost five times as much than the average annual maintenance for synthetic infill fields with a difference of \$28,000.

Of the five natural grass fields only field 1, the university field, is on a schedule to be resurfaced. The cost includes

Natural Grass Monthly Avg. Surface Hardness



Synthetic Infill Monthly Avg. Surface Hardness



removal of old surface, rolling, topdressing, and seeding. It is planned to be done every 5 years at the cost of \$21,000. Re-carpeting of the five synthetic fields was planned for all fields after 8-10 years. The average cost of re-carpeting synthetic fields was \$376,000.

20-YEAR BUDGET

The average cost of a 20-year maintenance cycle for the five natural grass fields was \$903,000. The average cost of a 20-year maintenance cycle for the 10 synthetic infill fields was \$1,952,000. The average on synthetic infill fields was two times as much the average for natural grass fields.

The calculated individual annual hours for the natural grass fields averaged 22,000 hrs. Expanded to the 20-year period the usage-hours were an average of 438,130 hrs. Similarly the synthetic fields averaged 22,000 hrs. The average annual hours

of use on the synthetic fields was caused by low use on the high-school level field. Expanded to the 20-year period the usage-hours were an average of 1,402,000. Comparatively the average usage-hours on the synthetic fields for the 20-year period was three times as much than as on natural grass fields. The average cost to provide an individual with an hour of use for the five natural grass fields was \$2.18. The average cost per individual player hour for the synthetic infill fields was \$2.15. This figure emphasizes the importance of how necessary it is for synthetic fields to be adequately used. To be effectively used synthetic fields, with their life-cycle costs, need to be used for enough hours to be competitive with natural grass fields.

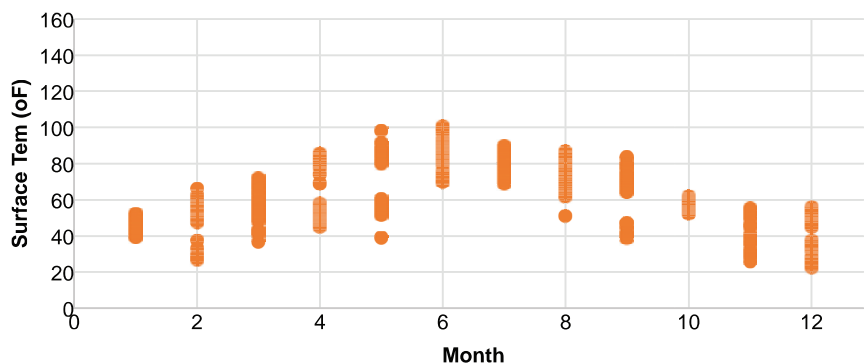
FIRMNESS AND TEMPERATURE

The relationship between month, surface temperature, and hardness can be seen in Figures 1 and 2. The months of June and July were the hottest month during the data collection with the synthetic fields' surface temperature measuring at over 140oF on the test points located in full sun (Figure 1). The hottest points on the natural grass fields' surface temperature were up to 100oF, but these areas had been worn by traffic and recently sand and seeded, the unworn full sun areas were measuring in the 80's.

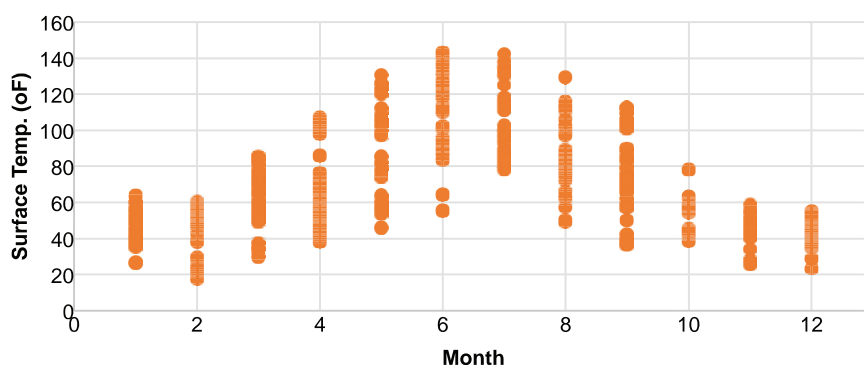
Surface hardness on natural grass fields showed great variation during the rainy season from November through March with firmness levels reaching up to 1.5" of depression in poorly drained areas that could be judged unplayable (Figure 2). The synthetic fields in this study showed little variation in firmness even during the rainy season, maintaining a depression range between 0.2" and 1.0".

The synthetic infill fields in this study were able to be as cost effect as natural grass with the player-hour use cost of 2.15 to the natural grass cost of 2.18 despite being twice as expensive over the 20-year period of analysis. This is likely to be credited to the synthetic fields' ability to maintain surface quality with high levels of use and little impact from weather. The synthetic surfaces maintained consistent surface hardness through the rainy season while the natural grass fields varied in hardness

Natural Grass Monthly Avg. Surface Temperature



Synthetic Infill Monthly Avg. Surface Temperature



with the rainy season, losing stability. These results support the idea that synthetic fields are able to be just as cost effective as natural grass fields, despite their larger costs, by providing greater amounts of player-use hours. It also suggests that if sufficient hours are used on the field it could potentially be a poor investment depending on the situation of the facility. For example, a high school football coach who wants to protect the field by not letting other groups use it would have would increase the cost per player-use hour.

Brian Daviscount is a graduate assistant; Alec Kowalewski, PhD, is a turfgrass specialist; John Lambrinos, PhD, is a landscape ecologist; Bart Eleveld, PhD, is an agricultural economics specialist; and Micah Gould is a graduate assistant, all at Oregon State University in Corvallis. **ST**



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Editor's note: In our September issue we blundered big time by mistakenly using some information from another Field of the Year entry that came from Jeffco Schools in Colorado rather than from the winning High School Football entry from that district. The correct information is below; we deeply regret our error and extend apologies and offers of beer-buying to the winners, Sun Roesslein, CSFM, and Christi Clay. Apologies as well to John Sears, stadium manager for Jeffco Stadium, for using parts of his FOY entry in this mistake.

NORTH AREA ATHLETIC COMPLEX

Jeffco Schools Athletics

GOLDEN, COLORADO

The winning field is the **North Area Athletic Complex** (NAAC) in Golden, CO rather than Jeffco Stadium in Lakewood. Here is the information for NAAC that we missed last month:

Original construction: 2000

Rootzone: 90% Sand, 10% organic matter from alfalfa

Turfgrass variety: Kentucky bluegrass, (Barrari, Full Moon, Barduke, Moonlight, Midnight, Fullback, Hampton and Noble); Perennial Rye (Sox fan, Barbeta, and Barlennium); Annual Rye

Overseed: Overseeding is a large part of our maintenance schedule, especially in 2014 with the Colorado School of Mines NCAA DII football schedule. Typically, we use Kentucky bluegrass in the spring, summer and early fall, then once our fall season begins we mainly use ryegrass. The fall of 2014, I was broadcast seeding weekly between the hashes with rye just to try to keep some grass growing out there.

Drainage: Four-inch corrugated drainpipe on 20-foot centers that run the length of the field and connect to a main catch basin.

Why should the STMA consider your field a winner?

The NAAC football field is a 5,000-seat stadium that is home to five area high schools. Those schools play all their home varsity games on this field. Three are 5A, the largest classification in Colorado and the other two are 4A. We host 2-4 games per week, for 10 solid weeks of regular season. There are no bye weeks. We are no strangers to football doubleheaders! A typical week allows us only 3 days to get the stadium cleaned, the field mowed, fertilized and painted before we get ready to host games that weekend. Then we re-clean the stadium, mow and do anything else needed in the 14-acre stadium for the turnaround from Thursday night to Friday night to Saturday games. If any of our schools make the post season, we would also host their home playoff game. For the fall of 2014, we hosted our first ever NCAA team, the Colorado School of Mines. Mines went on to win their 2014 Conference title, and we hosted their first round NCAA playoff game. In order to convert from high school to a college field, Friday night we would repaint the field, add the college hashes and clean the stadium after the high school game, then convert the goal posts on Saturday morning before the game.

In addition to our football schedule, we host the Annual Pomona Marching Band Festival.

This year, there were 19 bands that performed in the preliminary competition, with the top 12 performers returning for the finals that evening. We had a lightning and rain delay, which eventually cancelled the remainder of the competition, half way through the finals so we ended with 26 total performances that day. Each May, we host Golden High School's graduation ceremony. There is a 400-square foot elevated stage on the field for 2 days, roughly 350 seniors seated on the field and celebrations after the ceremony always spill down on to the field.

There are two full time staff members and together we manage a 14 acre sports complex, which includes the football stadium for which this application is intended, as well as a 2500 seat soccer stadium, a rubberized track and roughly 9 acres of other turf grass. We are responsible for managing everything

that happens at the stadium, including all aspects of the turf, the stadium, every event and staff member. Cultural practices including mowing, aerating, seeding, topdressing, and fertilizer applications get scheduled and performed by Christi and I. We also do snow removal as needed during our seasons.

Outside of our heavy schedule of games and events, irrigation is one of our biggest challenges. We use reclaimed water, which is high in bicarbonates. We have to adjust our fertilizer approach to account for the high sodium also. The pump house from the irrigation pond is completely controlled by the City of Arvada. They regulate our system pressure, as well as give us a water budget of total gallons to use for the year. We are located just a few miles south of the National Wind Technology Research center so ET rates affect us exponentially. **ST**

Maintenance plan

January

- Monitor field moisture, hand water with hoses if necessary.
- Stadium projects, such as equipment maintenance cleaning and organizing garage/workshop area.
- Attend National STMA conference
- Research new products
- Consider changes to annual maintenance program
- Snow removal as necessary (stadium, not fields)
- Take equipment to shop for heavier maintenance, reels ground, etc.

February

- Continue stadium projects and clean up
- Continue to monitor moisture and water as necessary
- Begin to prepare for track practice beginning, including rope off the football field, put out hurdles, track repairs, clean restrooms.
- Soccer field prep for spring season; lay out and paint field, put together soccer goals, check field and building lights
- Order supplies for season.

March

- Soccer season begins; track practice begins
- Continue watering by hand until irrigation is turned on
- Once irrigation is turned on, check fields for fixes and adjustments as necessary, and then move on to ornamental clocks to check those zones.
- Aerate ornamental with drum aerator
- Spring break renovations—heavily aerate football field, using hollow tines and 2 X 2-inch spacing, seed with Kentucky bluegrass at 4 lbs./1,000 sq. ft., topdress with 100% sand. 100 lbs. Andersens NS-54 43-0-0 @ 0.6 lbs. N/M. (Slow feed as grass comes out of dormancy.)
- Pull soil tests before applying any fertilizer; submit for analysis.

April

- Continue irrigation fixes and adjustments
- Begin mowing as necessary

- Ensure reel mower is back lapped and clean

May

- Mow fields as needed (Football height of cut is 2 inches)
- Graduation prep, clean football stadium, pressure wash stands and restrooms
- Liquid fertilizer application the week before graduation, 18-3-6 @ 4.7 oz./M of product, and Organic Iron @ 3.7 oz./M of product
- Ornamental fertilizer spread, 35-0-10, SIFI slow release @ 1lb N/M
- After graduation, recycle dress football field in two directions, drag and hand rake, recycle dressing as needed.
- Irrigate as needed
- End of the month, spray broadleaf herbicide, Q4 @ 2.5 oz./M of product.

June

- Recycle dress football field in two directions, drag and hand rake recycle dressing as needed.
- Begin Poa suppression program, using Legacy @ 15oz/A, two week intervals
- Mow fields as needed (daily)
- Irrigate as needed (deep and infrequent)
- Apply granular wetting agent, PBS150 @ 4lbs/M of product
- Spot spray herbicide as needed.

July

- Mow as needed (daily)
- Irrigate as needed (deep and infrequent)
- Check field irrigation weekly for leaks or breaks, valve checks
- Spray liquid fertilizer, Per 4 Max @ 3oz/M of product
- Solid tine aeration, during a cool week with rain in the forecast. 2 x 3-inch spacing
- Spot spray herbicide as needed

August

- Begin prepping for football season; goal posts repainted and put up, clean stadium and buildings, order supplies, lay out and paint football field two weeks before first game, mow daily, continue to monitor irrigation, clean up

- fence lines, edge entire stadium, check field set up supplies (yard markers, pylons, goal post pads, flags)
- Early August, seed 300 lbs. (4.4lbs/M) of KY blue with Turfco seeder, spread SIFI 35-0-10 @ 1.12 lbs. of N/M, topdress with 100% sand
- Week 1 (1 game) of football season, spray liquid fertilizer, Adam's Earth biostimulant @ 3oz/M of product, Radicular @ 4oz/M of product and Quelant CA @ 2oz/M of product
- Field is mowed daily, paint the field every week

September

- Continue mowing daily flipping the pattern every 2 weeks, and painting the field weekly.
- Week 2 (4 games), spray liquid, CPR @ 3.5oz/M of product, PanaSea @ 3oz/M of product and SeaQuential @ 3oz/M of product
- Week 3 (2 games), aerate with super cross tines, broadcast seed 200 lbs. of HD 2.0
- Blue/Rye seed mix between the numbers (approx. 32,400 sq. ft.) @ 6 lbs./M, topdress with 100% sand. Apply 6-24-24 XB @ 0.5lbs N/M. Apply granular wetting agent, PBS150 @ 3.8lbs/M of product
- Week 4 (2 homecoming games), spray Adam's Earth biostimulant @ 3oz/M, Radicular @ 4oz/M, Quelant CA @ 2oz/M, and 12 Iron @ 4oz/M
- Week 5 (1 homecoming game and marching band festival), spread Nitrex 19-3-5 granular fertilizer, @ 1 lb. N/M.
- Spray Turgor 2 3.4 oz./M in preparation for Marching Band Festival.

October

- Continue mowing daily, flipping the direction every 2 weeks, and painting the field weekly. Re-paint the field the night before college games, and the night before the marching band festival. The field also gets re-painted during the band festival between preliminary performances and finals
- Week 6 (3 games), broadcast 200 lbs.

- RPR between the numbers @ approx. 6 lbs./M, topdress lightly (1/8 inch) with 80/20 sand/organic mix
- Spray Turgor @ 3.5 oz./M the week of Band Fest
- Prep for Marching Band festival, first Saturday in October
- Week 7 (3 games), aerate field with super cross tines, 2 x 4-inch spacing, broadcast 300 lbs. of RPR seed between the numbers @ approx. 9lbs/M, topdress lightly (1/8 inch) with 80/20 sand/organic mix. Spray Per 4 Max @ 3oz/M
- Pull soil tests
- Week 8 (3 games), spray Radicular @ 4oz/M and Foliar @ 2oz/M
- Week 9 (4 games), spray 18-3-6 @ 4.7oz/M and organic iron @ 3.7oz/M Nitrex 19-3-5 granular fertilizer, @ 0.83 lbs. N/M, broadcast seed 200 lbs.
- RPR between the numbers @ approx. 6lbs/M, lightly topdress (1/8 inch) with 100% sand
- Week 10 (1 game scheduled with 2 playoff games probable), spray CPR @ 6oz/M, Seaquential @ 3oz/M, Pana Sea Plus @ 3oz/M
- Snow removal if necessary.

November

- Game schedules change, this month begins the playoffs
- Week 11 or 12, depending on playoff games, spray 18-3-6 @ 4.7 oz./M and Organic iron @ 3.7 oz./M
- Snow removal as necessary during season
- Begin winterizing the stadium, buildings and equipment

December

- Continue winterizing stadium, buildings and equipment
- Winter stadium projects
- Review the year/ season and maintenance program
- Begin researching new/alternate products and tweak maintenance program
- Attend RMRTA Regional conference.

EFFECTIVE VERBAL COMMUNICATION WITH EMPLOYEES

Editor's note: This article first appeared in STMA News Online, and includes contributions from the 2015 STMA Information Outreach Committee. Another key resource was <http://www.forbes.com/sites/susantardanico/2012/11/29/5-habits-of-highly-effective-communicators/> <http://www.helpguide.org/articles/relationships/effective-communication.html>.

Very often as managers we give instruction to employees only to have the message misinterpreted, which can lead to misunderstandings, frustration, and conflicts. Employees significantly influence the outcome of any work project. If you, as a manager, communicate strategically and with purpose, you are more likely to see employees working with a common purpose towards shared goals. Effective communication helps us connect with others, build trust and respect, and improve teamwork. Communicating may seem easy, but communicating effectively actually takes time and practice. Choosing the right words, actively listening, and getting the message across are skills we all need to improve. Next time you find yourself in the middle of a misunderstanding, try one of the following tips to help resolve the issue.

LISTEN

One of the most important parts of communication is not speaking at all. Active listening allows us to fully engage in the information that is being conveyed as well as understand the emotions the speaker is trying to communicate. You are also building a stronger, deeper connection with the person by making him or her feel heard and understood. Don't just listen to give a reply, listen intently (without interruption) to fully understand the issue. Listening is critical as a manager because it helps form good relationships and encourages more open communication in the workplace.

Next time, try this: Avoid interrupting. Think about what the person is saying and repeat it in your mind as he or she speaks. This prevents your mind from wandering and allows you to focus on the situation at hand.

Try not to redirect the conversation to you and your concerns. In conversation, people often focus on what they are going to say next. Listening is not the same as waiting for your turn to talk. You can't concentrate on what the speaker is saying if you are forming a reply.

Next time, try this: Wrap up with a summary that reiterates the instructions. Employees benefit from hearing instructions twice. Try not to redirect the conversation to you and your concerns. In conversation, people often focus on what they are going to say next. Listening is not the same as waiting for your turn to



talk. You can't concentrate on what the speaker is saying if you are forming a reply. Stop everything you are doing and show interest in what is being said. Maintain eye contact, nod occasionally, smile, and encourage verbal comments. Monitor your facial expressions and posture. Speakers can often read facial expressions and know if your mind is somewhere else.

KEEP THE MESSAGE SIMPLE

Effective communicators are able to take very complex messages and break them down into clear and concise information that employees are able to grasp and act upon. Say what you mean in as few words as possible and avoid technical jargon and business talk.

Next time, try this: Make the most important point at the beginning. If your direction turns into a lecture, you risk losing the employee's attention. Follow your point with an example and then gauge the listener's reaction to see if further detail is needed. Be assertive and communicate clearly and directly. Being assertive does not mean being hostile, aggressive or demanding. Being assertive allows the expression of thoughts, feelings, and needs in an open and honest way. Wrap up with a summary that reiterates the instructions. Employees benefit from hearing instructions twice.

BE ENGAGED

Show employees you care about them and their work. Interact with people face-to-face and build personal connections by taking an interest in both their personal and professional

lives. Employees often need to feel a personal connection to you and the work you believe in.

Next time, try this: Put your phone and any other distractions away. You can't communicate effectively if you are multi-tasking, daydreaming, texting, or thinking about what you are going to say next. Stand up straight, look the person in the eye, and stay focused on the moment. Focus fully on the speaker. If you are distracted, you're going to miss nonverbal cues and the emotion behind the message. Focus on the speaker's body language, tone of voice, and other nonverbal cues.

COMMUNICATE FACE-TO-FACE

Technology has infiltrated the workplace to the point that it has had a detrimental effect on personal relationships. Emails and text messages can often be misconstrued: instructions can be misunderstood and carried out incorrectly, and words can be misinterpreted as bossy or angry. Communicating without gestures and smiles can give the recipient the wrong idea, especially when the sender isn't an articulate writer.

Next time, try this: Instead of sending an email or text message, talk to your employee face-to-face. If that is not possible, pick up the phone and call. Use body language to convey positive feelings. Stand tall, maintain eye contact, and smile. It makes you feel more self-confident and puts the other person at ease.

HANDLE DISAGREEMENTS TACTFULLY

Every manager clashes with employees at some point. You don't always need to like an employee or agree with their ideas, values, or opinions, but you do need to respect that employee. In the workplace, it is important to be professional, set aside judgment, and withhold blame and criticism in order to fully understand a person. To maintain effective communication in stressful situations, be aware of and in control of your own emotions. It doesn't do anyone any good if you misread people or a situation, send confusing signals, or lapse into unhealthy behaviors.

Next time, try this: Instead of openly disagreeing, try to gain more information about the situation by asking questions and listening first. Avoid knee-jerk reactions by taking a moment to calm down or postponing the conversation. Consider compromising. Finding a happy middle ground can reduce the stress level for everyone and improve the relationship for the future. Confront issues in a timely manner. To prevent small conflicts from evolving into major crises, nip it in the bud as soon as possible. Allowing an issue to persist creates resentment, frustration, and negative feelings. When responding to conflict, do so with an open mind and nonjudgmental approach. Avoid personal attacks, ask questions, and actively listen.

EFFECTIVE COMMUNICATION IS TWO-WAY

As a manager, it is important to be able to provide good instruction and also assess how employees understood the instructions. Managers tend to focus intently on the message

and forget to tune into the response. Overwhelming amounts of information, technical information, or inexperience can prevent an employee from understanding a task. To ensure your message is understood exactly the way you intended, listen to the other person's interpretation.

Next time, try this: Ask the right questions to be sure you were understood. Open ended and leading questions, such as who, what, where, when, and how, can help flush out issues and ensure directives are understood. Listen to employees with eyes and ears. Listen and hear what is being said. Look for nonverbal cues to see if the message was understood. Allow a way for employees to give anonymous feedback. An employee may not feel comfortable addressing the manager directly. Providing an anonymous system can ensure all employees have a voice while also giving insight on your own communication strategies.

RECOGNIZE NONVERBAL SIGNALS

Nonverbal communication, or body language, can often be overlooked. Nonverbal communication includes facial expressions, body movement and gestures, eye contact, posture, tone of voice, muscle tension and breathing. By observing how people look, listen, move, and react, words aren't always needed to communicate feelings. Nonverbal communication should reinforce what is being said.

Next time, try this: Encourage communication with open body language. Uncross your arms, stand with an open stance, sit on the edge of your seat, or maintain eye contact. If you are receiving a negative comment or you are having a disagreement, be aware of negative body language. Try not to cross your arms, avoid eye contact, or tap your feet. Even if you disagree with the speaker, avoid sending negative signals so the other person does not become defensive.

PROVIDE FEEDBACK

Employees need to know you recognize and appreciate their efforts or that you expect them to work harder. Both positive and negative feedback should be shared with your employees in a clear and detailed manner.

Next time, try this: Know when to have a private conversation. If an employee needs to be reprimanded or receive constructive criticism, do so in private. Be direct and clear about the situation and what needs to change. Offer solutions if there is a problem. Ask questions to understand what led to the problem. Provide positive feedback. Praise and recognition make employees feel important, which motivates them to work harder.

Effective communication is always about understanding the other person, not about winning an argument or forcing your opinions on others. By effectively communicating with employees, we can build trust and respect, improve teamwork, help others feel heard and understood, and improve decision-making and problem solving. In the workplace we can all improve our communication skills to become more effective leaders. **ST**

THE SPORTSTURF INTERVIEW: HERB COMBS, CSFM, PENN STATE

This month in "The SportsTurf Interview," we feature Herb Combs, CSFM, who recently was named an assistant athletic director at Penn State. Before this promotion, as athletic fields supervisor, Combs led Penn State's grounds crew in building, preparing and maintaining approximately 200 acres of outdoor athletic facilities, including intramural fields. A Penn State graduate, Combs was a member of the University of Minnesota athletic staff before returning to his alma mater in 2006. Combs and his wife, Christina, have two children.

SportsTurf: You recently were promoted to assistant athletic director for outdoor athletic facilities. What new duties does this position entail? Does it mean you no longer will be working on your fields?

Combs: As part of the promotion I will oversee all aspects of our outdoor athletic facilities and operations. I will now shift my focus from the tactical day-to-day operations to more of a managerial and strategic approach. We are currently in the middle of a facility master plan that once finalized will have a big impact on our current facilities and require me to focus on advancing our facilities into the future. The promotion definitely will minimize the time I will get to spend in the field and with my staff.

ST: What wisdom can you share with younger turf managers about being successful in the profession?

Combs: You have to have a passion for this industry and be willing to put in the hard work and long hours. Don't be afraid to take a risk and don't be afraid to fail. When you are first starting out be a sponge and take in as much as you can from as many different people as you can.

ST: You know a lot of sports turf managers. What are they saying are the biggest obstacles to overcome for them to be successful today?

Combs: I think the biggest challenges today are the number and frequency of events for any one given facility, in addition to the age-old saying of having to do more with less.

ST: What are your biggest challenges working in the high-profile Big 10?

Combs: Our challenges tend to revolve around the number of teams and events we support. We are responsible for all our varsity teams, intramural program and club sports programs. It seems that weather is our single biggest challenge. It also seems like we never have an off-season either.

ST: How has social media impacted your work?

Combs: I am unfortunately old school when it comes to social media and haven't embraced it yet. However I believe it is a huge networking tool and a way to connect with what others are doing within the industry.

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

Combs: I think the profession will continue to grow as more and more organizations focus on safe and quality athletic venues. More and more opportunities are starting to appear outside MLB, NFL and NCAA, in parks and rec and high schools, which will allow for people to choose different avenues to be successful.



Herb Combs, CSFM, discussing the soil profile at Penn State's Beaver Stadium during Penn State's Turf Days in 2014.

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

Combs: I found my first job through STMA back in 2002 and have been a member ever since. The organization has provided me a network to which I can reach out to anyone for help or mentoring at anytime. I also have many lifelong friends that I have met through STMA. STMA has also provided me a professional recognition that is respected across the industry.

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

Combs: Outside of work I enjoy playing ice hockey and hunting or fishing. I also enjoy spending time with my family and coaching my kids' sports teams. **ST**

John Mascaro's Photo Quiz

Answers from page 19

John Mascaro is President of Turf-Tec International

The missing turf and depression on this lawn area behind the maintenance shop was caused by a mechanic's assistant. As you can see from this "cow path," the trail leads from the maintenance shop to a medium-sized tree and back again. So, seeing this trail, you must ask yourself, why would someone walk back and forth to a tree so often? Well the answer is still kind of unclear; however, for some reason the mechanic's assistant at this maintenance shop likes to relieve himself on a tree. Even though the shop has a working bathroom facility, the tree was always his favorite "go to" spot. As you can see by the trail left in the turf, he stayed plenty hydrated during the day and apparently made quite a few trips to the area. It is unclear whether the tree suffered any detrimental effects from the extra watering it received however at least the smaller tree has been spared. One must also question why the person did not go further uphill to prevent the possibility of returning to the shop with a wet foot.

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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Disinfecting/sterilizing synthetic turf



Editor's note:
This article was written by Stan Moscrip, general manager, GreensGroomer Worldwide (smoscrip@greensgroomer.com).

Over the past few years, there have been many disagreements concerning synthetic turf and the need for disinfection. Just as the need for maintenance, de-compaction, and GMax/HIC criteria has evolved over time, so has the argument for disinfection and sterilization. I speak with turf managers and owners every day that have very strong opinions, both pro and con concerning this issue. I read the vast majority of the studies produced in the industry, and all seem to have their merits and validity. At the end of the day, the issue seems to come down to prevention and peace of mind, which are personal preferences.

The common denominator in thoughts concerning disinfection is the fact that harmful bacteria of all types are present in athletic facilities. Indoor facilities, showers, locker rooms and training rooms with hydrotherapy tubs can be breeding grounds for a host of microorganisms. From viruses such as hepatitis, HIV, and influenza to bacteria such as MRSA, E. coli, salmonella, and staph, due diligence is required to provide a safe environment for the athlete. Sweat, blood, mucous, and vomit are a part of sports, and it seems logical that these elements should at least be dealt with in some form or fashion of cleanliness. With that in mind, these are a few types of solutions to the disinfection of synthetic turf athletic fields.

The most common application, until very recently, is to spray a solution of an anti-microbial disinfectant over the entire field. It's the same thought process as an indoor wrestling facility that disinfects the mats that they will use for practice and competition, but on a much larger scale. Many reputable companies offer disinfection products that

can be tank-mixed and applied to the turf. Turf managers are very familiar with this type of application. It uses the same functions and application techniques as on their natural turf fields with the use of herbicides, fungicides and pesticides. As with any application using a spray technique, due diligence is required from beginning to end. Take the time to investigate and compare the various products available. Once a product is selected, follow exact label rates for the product to perform as expected. Remember, treat this application of product just as you would any other; it is a requirement to notify all parties involved with the actual use of the field. Allow sufficient drying time of the product on the blades of turf and upper level of the infill before use of the field continues. Watch the weather as well, as wind drift is an issue at many facilities, along with the possibility of rain prematurely washing away the product.

"Natural" treatments for synthetic turf have also entered the marketplace. One common type is to apply enzyme proteins to a surface. Enzymes act as a catalyst that start a natural process, or accelerate an existing one. The thought here is that enzymes are not living microorganisms, but are "living energy," capable of breaking down molecules such as bacteria, mold, viruses, or germs. Companies promoting products such as this state that natural/organic products can be used to replace the use of chemicals, with fewer possible side effects. A critical reading of the materials and information regarding these products show a product that is neutral pH, non-toxic, and non-caustic. These products are applied as a spray application, similar to the use of the disinfectant previously mentioned.

USING UVC TECHNOLOGY

The newest form of disinfectant in regards to synthetic turf is the use of UVC technology. Although the use of UVC for this purpose is relatively new to the turf industry, it is not new to many other industries that use it for sanitation. It was developed in the early 1900's, and became readily available in the 1930's by

the Westinghouse Corporation in an effort to use UVC bulbs primarily in hospitals for sanitation. Built around the idea of exposing bacteria to germicidal ultraviolet lights with powerful exposure, this method of disinfection is used daily in hospitals, water treatment facilities, and a host of other industries. It gained very early approval from the FDA and the US Department of Agriculture. The mobile units that are currently available are simply pulled across the synthetic turf field with a common tow vehicle, at a pre-determined rate of speed for maximum effectiveness. The attractiveness with the use of UVC is that it not only disinfects the turf, but sterilizes it as well. The result of using UVC properly is also that it breaks the molecular bond of a microorganism, not only destroying it, but also all associated DNA. Therefore there is no chance for a resistant strain to develop. The basic premise behind the use of UVC is the complete eradication of a microorganism and destroying it from replicating into one of the "Super Bugs" that we seem to hear about in the news so often. UVC has also been a popular choice in areas around the country that are in water conservation mode.

As mentioned earlier, the decision to disinfect synthetic turf athletic fields is often a personal choice, based upon belief. I know many turf managers who use any one of the techniques described that show results that please their respective programs. Many facilities use a combination of these techniques to combat microorganisms; they simply have made the commitment to make disinfection/sterilization of their turf facilities a part of the overall maintenance plan for the safety of their synthetic turf fields. Regardless of the "percentages" or leaving things to chance, they choose to perform preventative maintenance and keep a record of such treatments. There may never be a definitive answer to the question of the prevalence or even the existence of harmful microorganisms in synthetic turf of any kind, but the issue can't simply be treated as "out of sight, out of mind." **ST**

Tips for Lowering the Cost of Commercial Propane Mowers

Editor's note: This article ran in our sister publication, Landscape & Irrigation, last month and we think it shares great information about propane mowers for our readers even though its original audience was landscape professionals.

■ BY JEREMY WISHART

Purchasing new commercial mowers is always a hefty investment for a professional landscaper. And for companies looking to invest in alternative fuels such as propane, rather than continue operating gasoline or diesel mowers, there's likely an additional upfront cost associated with the equipment — sometimes as much as \$1,000 per mower depending on the model.

Fortunately for contractors, the additional upfront cost of a propane machine can be reduced or recouped over the lifetime of the mower if the propane mower purchaser takes a few actions.

By combining fuel contracts, equipment incentives, OEM rebates and special pricing, using conversion kits for existing machines, and factoring in a propane mower's higher lifetime productivity, contractors can purchase a clean-burning mower for the same as or less than a gasoline or diesel engine of a similar model.

TIP 1: TAKE ADVANTAGE OF ALTERNATIVE FUEL CONTRACTS

A lot of landscape contractors are initially

attracted to propane because of the low cost of the fuel. That cost can actually be further reduced for a contractor purchasing propane in bulk over an extended period of time using a fuel contract.

Through a fuel contract with a local propane retailer, contractors can negotiate a fixed price for their propane delivery and propane cylinder leases, and have that agreed-upon price locked in for a year or more. Building a contract for a set price is a budget-friendly practice to prevent headaches associated with fluctuating oil prices.

Companies, such as Rotolo Consultants Inc., in Louisiana, are saving up to 40 percent on the cost of fuel for their mowers in comparison to what they were spending on gasoline. A good partnership with their propane retailer helps the company keep fuel costs steady by settling on a fuel contract.

Another example, Davis Mowing Service, in Sauk City, Wis., reported saving as much as \$2.70 per gallon of propane compared to gasoline when gasoline prices were high. Stay Green Inc., a company with 66 mowers in Santa Clarita, Calif., estimated that running its fleet on propane costs half of what it cost with gasoline.

TIP 2: USE EQUIPMENT INCENTIVES

Certain states and organizations offer incentives or rebates for using alternative fuels.

The Propane Education & Research Council (PERC), for example, has helped fund equipment purchases and conversions of more than 3,500 machines since starting the Propane Mower Incentive Program in 2012. The program essentially removes the initial cost difference by offering either a \$1,000 rebate on a new propane mower or \$500 on a qualified conversion kit. It will likely be offered to contractors again starting in October.

Ringers Landscaping in Fox River Grove, Ill., got a new propane mower fleet — 10 Gravely commercial mowers — at 60 percent of the retail cost by applying for the program while PERC was offering double incentives. Owner Erik Ringstrand said Ringers also received a rebate from the state of Illinois that supplemented the purchase.

Davis Mowing Service also used the Propane Mower Incentive Program alongside an incentive through the state of Wisconsin to remove \$1,500 from the upfront cost of three new Ferris mowers. And U.S. Lawns, a commercial landscape franchise in Hampton Roads, Va., received nearly \$34,000 through PERC's program and a state incentive program.

Other organizations, such as Clean Cities, local environmental groups, and locally based propane councils, may offer rebates or grants to businesses considering alternative fuel equipment.



PHOTO PROVIDED BY THE PROPANE EDUCATION & RESEARCH COUNCIL

MAINTENANCE TIPS

TIP 3:

OEM REBATES AND SPECIAL PRICING

A strong relationship with OEMs can also bring down costs associated with new equipment. Some OEMs offer rebates or special fleet pricing incentives if several machines are purchased at once.

Many OEMs currently offer propane equipment, including Gravely, Exmark, Toro, Walker, Big Dog, Bob-Cat, Cub Cadet, Dixie Chopper, Ferris, Husqvarna, Hustler, John Deere, R&R Products, Kubota, Scag, Snapper Pro, Ventrac, and Zipper. It's worth asking a dealer about propane when considering new equipment. There are, in fact, more than 150 models of propane mowers on the market today, including stand-on, zero-turn, and walk-behinds.

OEMs can also help companies save by offering training on mower maintenance and cylinder exchange to employees at a contractor's home office, which saves time and money for business owners seeking training, and opens an opportunity for employees to learn and develop skills. This was one of the benefits RCI had in purchasing its mowers from John Deere. Between its propane retailer and John Deere representative, all employees at RCI were quickly educated in switching out propane tanks on the mowers. RCI's maintenance shop became more efficient and detailed by focusing on the one brand of propane mower, rather than the mash-up of makes and models that previously made up the fleet.

TIP 4:

CONSIDER CONVERSION KITS

If a contractor doesn't have a budget for new propane equipment, a less expensive way to convert an existing mower fleet to propane is with certified conversion kits.

Five companies offer certified conversion kits that meet the highest environmental standards from the Environmental Protection Agency and the California Air Resources Board. More information about Alliance Small Engines, EnviroGard, Hendrix Progressive Fuel Technologies, Metro Lawn and Propane



PHOTO PROVIDED BY THE PROPANE EDUCATION & RESEARCH COUNCIL

Power Systems is available at propane.com/commercial-landscape/propane-conversions.

Russo Lawn & Landscape in Windsor Locks, Conn., has used PERC's \$500 rebates to convert its fleet to propane over several years. The company started with converting four mower engines in 2013 — two Exmark Vantage stand-ons and two Exmark Lazer Z zero-turns — along with buying two dedicated propane Exmark Lazer Z mowers.

TIP 5:

OFFSET UPFRONT COSTS WITH AN INCREASE IN PRODUCTIVITY

Improved productivity is an often-stated benefit when contractors switch to propane.

Propane creates less downtime for fuel-related maintenance and repairs, so equipment stays out in the field working (and making money for the landscaper).

Refueling occurs onsite, and fuel delivery can be tailored to the company's specific needs. There's no more crew time wasted

refueling at gas stations in the morning and zero chance of fuel pilferage, something so common for contractors that they build a pilferage line item in their budgets.

All of these benefits lead to more productivity, which means more lawns are cut each day. That additional productivity can help a contractor make up the increased upfront equipment costs fast.

For more information on how propane can save money, visit propane.com/commercial-landscape/ to read full case studies, watch testimonial videos, learn about propane retailers and OEMs offering propane equipment, and even determine savings generated by switching to propane with PERC's cost calculator.

Jeremy Wishart is deputy director of business development at the Propane Education & Research Council. He can be reached at jeremy.wishart@propane.com. **ST**

Building a contract for a set price is a budget-friendly practice to prevent headaches associated with fluctuating oil prices.

NEW PRODUCTS



ECOLAWN'S WALKER MOWER TOPDRESS ATTACHMENT

Ecolawn Applicator introduces the New Walker Mower Top Dresser attachment, available now. This zero turn Walker Mower attachment is a unique broadcast spreader; the ECO 75's controls are integrated with the Walker Mower for comfort, control, and accessibility. The newly designed hopper eliminates material bridging with smooth, steep sides and its live conveyor system and agitator maintain steady material flow for consistent even spreading. Ecolawn's popular dual reverse spinner broadcast system is PTO driven therefore giving unlimited application thickness control over to the operator's ground speed. This feature is unique to this model! Features include Zero turn attachment design; Even 180 spread with dual reverse spinner mechanism; PTO Powered; Polythene hopper 11.5 cu. ft. capacity; Controls: feed trap, live bottom/agitator; Quick on the go, easy adjustments Application Rates; Spreading width: 4 to 14 feet; Application thickness: 11.5 cubic feet in one spot to a very thin application

Ecolawn



CUSHMAN UNVEILS NEW HAULER UTILITY VEHICLE LINEUP

Cushman has a new truck-inspired line of Hauler utility vehicles that offer more payload, a larger bed, and affordable accessories. These new Haulers can be customized to include either a sound-dampening 12-cubic-foot durable roto-molded polyethylene bed, or the upgraded 15-cubic-foot fully aluminum bed for extra space. The standard poly bed includes integrated divider slots to allow for increased organization and customizable bed storage. The aluminum bed features an L-track bed system that can accommodate hooks and brackets for convenient tie-down locations and space-saving accessories. New features include: Optional power dump for heavy lifting; standard rear hitch receiver to help crews tow whatever the day demands; upgraded premium tires that provide improved traction; and optional 12V or USB outlets, to ensure tablets and smartphones don't lose power. All Hauler PRO and Hauler PRO-X models feature a powerful 72-volt AC electric drive that can go up to 50 miles on a single charge. Additionally, the Hauler PRO can be equipped with an optional IntelliBrake system.

Cushman



SNOWEX ADDS UTV V-PLOW

Adding to its comprehensive line of snowplows, SnowEx introduces a new, professional-grade V-Plow for UTVs. Measuring a full 6 feet wide, the plow blade angles to 5 feet wide to fit most sidewalks and through gates. Two width settings cover the optimal tire track width on a range of popular UTVs. Configuring the plow to straight blade position, V position and BUCKET BLADE scoop position allows for ideal customization when facing various snow management situations. The UTV plow blade is constructed of high-strength, low-alloy steel components that are stronger and lighter than regular steel. It's also reinforced with six vertical ribs for additional stability. And the 5-inch hardened steel cutting edge has built-in trip-edge protection, which will trip in any position without losing the snow load. A POWERCOAT finish offers durability and maintenance-free protection.

SnowEx



KLOCKNER STADIUM,

University of Virginia, Charlottesville, Virginia

Why STMA should consider your field a winner?

Klockner Stadium is home to the University of Virginia's (UVa) soccer and lacrosse teams competing in the Atlantic Coast Conference (ACC), and the 2014 NCAA Division I Men's Soccer Champions. During the 2014-2015 seasons UVa hosted 35 regular season games, the ACC Women's Lacrosse Championships and eight NCAA post-season games. The sports turf crew totals four full time employees and one seasonal employee which are also responsible for maintaining the track, softball, football and baseball stadium fields as well as two natural grass practice fields, four artificial fields and the surrounds of the athletic facilities. With the sustained success of UVa teams comes national exposure. In 2014-2015 Klockner hosted eight televised games. This publicity increases the

pressure to overcome challenges and showcase Klockner as one of the finest fields in the country.

Klockner is one of three natural grass fields in the NCAA that hosts D1 men's and women's soccer and lacrosse. Four different teams using one field bring many challenges. Wear is the main problem as we are unable to shift the three different fields. The soccer goalmouths, lacrosse goalie creases and midfield, all align in the center of the field creating significant wear and compaction problems. In the fall during soccer season, special attention is given to the soccer goalmouths and sidelines. In the spring we focus on the lacrosse creases, the attack area and the team bench areas. During both seasons, aerification was paramount to our recovery in these heavily compacted wear areas.

Additionally, weather and scheduling are important factors



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

to overcome in successful field maintenance. Finding open windows, based on events, can be frustrating when there is little time for maintenance. Overseeding in the fall is critical for late season coverage and contributes to our spring season green up. Having a busy fall calendar of events, we were only able to provide compaction relief by solid tining one time (compare this to the spring season which we solid tined twice and core aerified twice). Weather played a large part in the beginning of lacrosse season. During our opening game Feb 14, we had a snowstorm and had to blow the lines throughout the game in order to finish. We then received consecutive 8" snows that necessitated postponing two lacrosse games.

After the lacrosse season we executed an aggressive maintenance strategy focusing on the goalmouths, goalie creases and team areas by laying 6,829 square feet of sod. To

Category of Submission: College Soccer

Sports Turf Manager: Jesse Pritchard, CSFM

Degree: Bachelor's of Science in Horticulture with an emphasis in Turfgrass Management

Experience: I graduated from the University of Tennessee in 2001. There I worked for both the Intramural and Athletic department field crews. I accepted a job with Sports Turf Management out of Atlanta, GA in February 2002. There I was responsible for maintaining 4,000,000 square feet of contracted field maintenance. I accepted the head Sports Turf Manager position with the University of Virginia in July 2005. I have been serving in that role for the last 10 years trying to improve our athletic fields every day.

Full-time Assistant Sports Turf Manager:
Phil Bathalon

Original construction: 1992

Rootzone: 100% sand

Turfgrass variety: Patriot bermudagrass

Overseed: Overseeded with Field General Blend perennial ryegrass, 'Karma', 'Express II' and 'Fiesta 4' in late September. To seed we broom dragged, mowed and blew the field followed by seeding @10lbs/1000. We then broom dragged the seed to create the best seed to soil contact possible.

Drainage: Originally the field was built with a MOTZ PAT system with vacuums. Over time the drain lines filled with sand and the drainage slowed dramatically. In 2006 4-inch double wall NDS drainpipe was installed on 15-foot centers running the length of the field. These pipes empty into a 6-inch mainline on both ends of the field.

help enhance root zone productivity we deep cored twice, core aerified three times, verticut twice and also top dressed USGA sand on two occasions.

We feel we began the 2015 soccer season as the best collegiate soccer field in the country with our aggressive summer maintenance strategy to recover from deep 2014-2015 post season runs and a weather impacted spring. Thus, we feel Klockner Stadium is deserving of the STMA Collegiate Soccer Field of the Year.

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

Pritchard: Three significant reasons: I grew up seeing the satisfaction my father received creating wood furniture. I grew up on a baseball diamond and would stripe my own yard and the entire neighborhood as a 10-year old. And I had the opportunity to work for Bobby Campbell as a student at the University of Tennessee. Like my father creating a fine piece of furniture, I knew the first Saturday I watched 110,000 people in Neyland Stadium look down upon something I helped create, I could never doing anything else and be satisfied at work.

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

Pritchard: Phil Bathalon and I do the best we can with what we have to get the job done. We have a small staff and our equipment could have antique plates on them! With a small staff we need to work very efficiently to meet our expectations. When equipment goes down or breaks, this can be extremely challenging. Our approach when those challenges arise is to be prepared for them. We grind our own reels in house to save time, for example. We keep spare pumps/cables for our paint machines and repair them in house during the winter. We can't fix everything on the spot, but we try to anticipate what might slow us down.

ST: What changes if any did you implement this year for the winning field?

Pritchard: Phil Bathalon is one hell of a sports turf manager. He is tireless making Klockner Stadium the absolute best NCAA soccer and lacrosse field in the country. There are no tricks or short cuts to having a great field. Hard work with sound agronomic principles is the only thing that will elevate a field. Recently we installed a Weathermatic SmartLink controller. This controller allows us much more flexibility as it is controlled through a laptop or smartphone. Our soccer coaches recently asked us to start watering the field pregame and just before the second half. This controller allowed me to let our game manager

JANUARY

With the field completely dormant and being between seasons, we focused on surrounding grounds, equipment maintenance, and taking soil samples.

FEBRUARY

With the field still in dormancy and the first men's lacrosse game on February 14 preparation for the season begins in earnest. To initiate compaction relief, the field was solid tined a week prior to the first game. We received the first snowfall of the winter during the first game of the season causing the field to be in whiteout conditions. To continue play, the field lines were cleared throughout the game. Following this snowfall we had one more snowstorm causing the field to be unplayable until March.

- Solid tined 8mm tines at four inch spacing
- Mowed four times at 0.75 inches
- Blew debris off the field
- Removed grow cover from soccer goal mouths
- Layout and painted lacrosse field (including logo)
- Hand topdressed sand in goalie creases
- One pallet of dolomitic lime (trying to melt snow applying half of the recommended lime from soil sample)
- Sprayed Floratine Per"4"Max @3oz/1000, Maxiplex @3oz/1000, Envoy@32oz/120 gal

MARCH

Due to snow cover, two games were moved to the field hockey field (which is able to be plowed). On March 9, the field was clear of snow and the focus was to prepare the field for back-to-back games: men's lacrosse on the 10th, women's lacrosse on the 11th, and

a men's/women's doubleheader on the 14th (the men's game being nationally televised).

- Painted men's lacrosse field (March 9)
- Solid tined 8mm tines at four inch spacing (March 10)
- Blew desiccation and debris (March 9/10)
- Measured out and painted women's field (March 11)
- Re-painted both fields (March 12)
- Mowed at a maximum of three times per week at 0.75 inch
- Aerified with 5/8 inch hollow core tines at four inch spacing and picked up cores
- Maintained goalie creases and areas around the women's lacrosse 8 meter fan
- Hand topdressed sand in goalie creases and filled divots
- Blew the field following all games to remove desiccated grass and debris
- Air Spike once a week
- Turned on irrigation
- Irrigated to ET 21-0-0 @. 5lbN/1000
- Sprayed Floratine Per"4"Max @3oz/1000, Protosyn @3oz/1000, Maxiplex @3oz/1000, Foursome @16oz/120 gal

APRIL

During April UVA hosted their final six home games. UVA then hosted the first ever expanded ACC Women's Lacrosse Championship played on natural grass. Beginning on Wednesday the field hosted seven, one-hour practices. On Thursday and Friday six games were played on the field. In between games we repainted the midfield face off and the top of the 8-meter fan. We also made sure the men's lacrosse crease was safe and level. Preparation for Sunday's nationally televised championship game began following the final game on

Friday by mowing and blowing the field. Early Saturday morning we repainted the field allowing time to dry before two additional practices at 10 and 11am with rain forecasted throughout the day. Following the tournament we were able to core aerify during the two week period prior to the NCAA Men's and Women's Lacrosse Regionals.

- Mowed at a minimum of four times per week at 0.75 inch
- Blew the field following all games to remove desiccated grass and debris
- Painted field according to schedule
- Hand topdressed sand and filled divots
- Maintained goalie creases and areas around the women's lacrosse fan
- Air Spike once a week
- Aerified 3/4 inch hollow tines at four inch spacing, drag in cores
- Irrigated to ET
- Earthworks 5-4-5 @. 5 lbN/1000
- Sprayed Harrell's Nitrate Plus @6oz/1000 21-0-0@. 5lbN/1000

MAY

With the regular season and conference championships finished for the year, UVA was selected to host both the Men's and Women's NCAA Lacrosse Regionals. The women had four, one-hour practices on Thursday followed by two elimination games on Friday. On Saturday there were four practices followed by the nationally televised doubleheader games on Sunday the 10th - which were the final games of the season. Overall, at this point, the field was relatively bare in the goalie crease areas and team areas. Fortunately, because we aerified at the end of April, the field was able to recover from the Women's ACC Lacrosse Tournament in time to host

the NCAA Regionals. Following the NCAA Regionals, the field would not have any play until August 15th. With roughly three months to grow in, our goal was to implement an aggressive maintenance strategy to provide much needed compaction relief and initiate root growth. The decision was made to sod the areas extending from the soccer goalie areas to the top of the men's lacrosse creases. By sodding, we were able to level off the goalie creases and allow us to focus on other pressing issues throughout the summer. A significant issue was the aging irrigation heads that had to be raised and replaced with new Hunter 140 opposing nozzle heads to create a more efficient system.

- Chemically sprayed out ryegrass
- Deep cored 10" with 1" hollow tines on 6" spacing (picked up cores)
- Mowed at a maximum four times per week at 5/8 inch
- Topdressed 45 tons USGA sand (broomed in two directions)
- Sodded 6,829 square feet Patriot bermudagrass
- Rolled sod
- Irrigation head replacement
- Irrigated to ET
- Sprayed Revolver @. 4oz/1000, Harrell's Nitrate Plus @6oz/1000 21-0-0@1lbN/1000

JUNE

After the initial application of Revolver to remove ryegrass, we noticed areas that were missed and sprayed a second application. Once we were confident with the maturity of the bermudagrass rhizomes and stolons, we were able to verticut the last week in June. This was done to accelerate the growth and spread rate of the bermudagrass. We were

download the app and run the quick cycle on her own, without someone from my staff needing to be at every game.

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

Pritchard: Walking into our football stadium on a crisp Saturday morning as the sun is coming up and seeing the final product from the hard work of the crew.

I choose to be positive. We have our headaches, but they are no larger than any other crew.

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

Pritchard: "We are in the business of fun," Bobby Campbell told me. "We help kids, students and adults play games. Stay positive and have FUN," he said.

ST: Are you yet involved in "sustainable" management practices? If so, what are you doing?

Pritchard: In the state of Virginia, all state-owned properties must have a state certified Nutrient Management Plan. This plan limits when we can apply fertilizer and the amounts and types of nitrogen and phosphorous we can apply. We have come to use more organic based fertilizers and much smaller, more frequent applications of synthetic-based fertilizers so we keep what we apply out of the Chesapeake Bay.

ST: How are using social media at work?

Pritchard: Twitter and Facebook are real time education.

I absolutely love the giving/sharing/teaching nature of my colleagues within the industry. I have picked up numerous little tricks from around the country. A student just coming into this industry is going to be so far ahead of where I was when I graduated college, because of the education they receive through social media.

ST: How do you see the sports turf manager's job changing in the future?

Pritchard: I see water and fertilizer restrictions being implemented by the state and localities with ZERO knowledge of what they are doing and how it affects end users. I believe individually, we as sports turf managers will need to become more professional and political to be considered the asset we truly are to our companies and communities. We will need to insert ourselves within these political discussions before decisions are made based on fear, not science.

I also believe the push for every high schooler to attend college is going to elevate the pay for those that have a technical skill such as a sports turf manager. Combine that technical skill with a professional, political approach, and I anticipate the demand and pay for Sports Turf Managers to continue to rise. **ST**

also able to verticut a second time at the end of the month. One issue that needed more attention at this time was the sideline (some of which was sodded). Aeration cores were used in an effort to grow in the bare sidelines.

- Aerified 3/4 inch hollow tines at three inch spacing, drag and blew cores
- Verticut two times
- Deep cored 10" with 1" hollow tines on 6" spacing (picked up cores)
- Mowed minimum three times a week at 5/8 inch
- Added cores on sidelines
- Irrigation head replacement
- Irrigated to ET
- Sprayed Floratine Hi-Five @3oz/1000, Per"4"Max @3oz/1000 bimonthly 20-0-20 @1lbN/1000

JULY

With a little less than two months remaining before the first match, the majority of the field had grown in. Larger weak areas, such as the four corners of the field, random spring dead spots and the sideline (cores did not work) were plugged for immediate coverage.

- Topdressed 45 tons (broomed three directions)
- Mowed minimum three times a week at 5/8 inch
- Dolomitic lime (the rest of recommended rate)
- Plugged
- Spot sprayed crabgrass
- Aerified 3/4 inch hollow tines at three inch spacing, pick up cores
- Finished irrigation head replacement
- Irrigated to ET
- Sprayed Floratine Per"4"Max

@3oz/1000, Harrell's N30 @6oz/1000, Primo Maxx@11oz/Acre
 ■ Earthworks 5-4-5 @. 5lbN/1000 21-0-0@. 5lbN/1000

AUGUST

August 17th was the first match of the new year with eight matches scheduled through the end of the month. During this final stretch finishing touches were completed such as continuing to plug the four corners of the field and giving a final edge to the border (the area between the fence and the field). We also aerified one last time, topdressed and rolled with a 2-ton roller.

- Edged border
- Aerified 5/8 inch hollow tines at four inch spacings, picked up cores
- Broom dragged field
- Topdressed 45 tons USGA sand
- Rolled
- Mowed at maximum four times a week 5/8 inch
- Soccer field layout and painted according to schedule
- Blew the field following all games to remove desiccated grass and debris
- Irrigated to ET
- Sprayed Harrell's Potassium+Calcium @3oz/1000, EarthMax @3oz/1000, Nitrate Plus @3oz/1000, Fe/Mn/Mg @6oz/1000 20-0-20 @1lbN/1000

SEPTEMBER

Nine matches were scheduled for the month of September. At this point, the field has held up as expected, goalmouths and sidelines are showing wear match-to-match. As the schedule permitted, we overseeded (into the first week of October) and replaced the goalmouths with thick cut sod to allow play on a championship field through the end of

the season.

- Moved at maximum four times a week 5/8 inch
- Painted field according to schedule
- Air Spike once a week
- Hand topdressed sand (sidelines, goalmouths) and filled divots
- Blew the field following all games to clear the field of desiccated grass and debris
- Irrigated to ET
- Sprayed Harrell's Potassium+Calcium @3oz/1000, EarthMax @3oz/1000, Nitrate Plus @3oz/1000, Fe/Mn/Mg @6oz/1000 20-0-20 @. 5lbN/1000
- Sprayed Turf Fuel Element 6 @3.2oz/1000, Photo Fuel @3.2oz/1000, Quick Green @4.8oz/1000

OCTOBER

With 17 matches played by the first of the month and five matches scheduled for October, rye grass is growing and noticeable wear has started to be apparent in the goal mouths and sidelines.

- Solid tined with 8mm tines at three inch spacing
- Hand topdressed sand (sidelines and goalmouths) and filled divots
- Moved at a minimum of three times per week at 0.75 inch
- Blew the field following all games to remove desiccated grass and debris
- Overseeded 1000 lbs. of Field General blend perennial ryegrass (we broom dragged one time prior to seeding and one time after to incorporate seed to soil contact)
- Painted the field according to the match schedule
- Irrigated to ET
- Sprayed Floratine Per"4"Max

@3oz/1000, Envy @40oz/120gal
 ■ Sprayed Par @32oz/120gal 14-20-14 @1lbP/1000

NOVEMBER

With 22 matches played and one regular season match on the first of the month, we hosted one ACC play in match and four NCAA regional matches. With the cooler temperatures and shorter days the grass is acclimating towards dormancy. Wear areas are a continuous problem as the inability to help relieve compaction becomes more apparent and prior spot seeding and use of green sand become ineffective.

- Mowed at a maximum of three times per week at 0.75 inch
- Hand topdressed sand (sidelines, goalmouths) and filled divots
- Blew the field following all games to remove desiccated grass and debris
- Painted field according to schedule
- Irrigated to ET
- Sprayed Floratine Per"4"Max @2oz/1000, Foursome @32oz/120gal

DECEMBER

All matches are done, however, prior to attending the NCAA Soccer Championships, both teams used the field for practice through the first two weeks of the month. Our goal was to ensure the field was safe and playable for practices. With 1.46 inches of rainfall during these two weeks, total field compaction became apparent with standing water.

- Blew out irrigation lines
- Seed and hand topdressed green sand in goalmouths prior to putting on grow mats for the winter
- 18-5-10 >12.60% Slowly available N from MU @1lbN/1000



“DOUBLE THE GREENING” OF THE RED BULLS

S **TMA announces** that the Red Bulls have achieved environmental facility certification for two of its facilities: Red Bull Training Facility in East Hanover, NJ, and Red Bull Arena in Harrison, NJ. Both facilities are managed by grounds team Dan Shemesh, Zachary Holm, Neal Sitzman and Dylan Martin.

This is a new certification program that STMA has been developing for 4 years and rolled out to the membership in June. The Red Bull Training Facility was the first to achieve the designation of Environmentally Responsible Management within the program. In addition to the Red Bull facilities, Elon University Sports Complex managed by Scott Stevens, CSFM, in Elon, NC and Prairie Ridge Sports Complex, managed by Elliott Josephson in Ankeny, IA have also earned the designation. Fifteen other facilities are in various stages of environmental certification.

To achieve certification, the first step is for the sports field manager to assess best management practices in 10 environmental areas. If an 80 percent or higher score is attained, the facility then qualifies to have the facility attested by qualified reviewer, such as an academic in turfgrass or environmental sciences, a Certified Sports Field Manager or an active member of an environmental organization.

Zachary Holm submitted the paperwork on behalf of his team for the Red Bull facilities. When asked about the process, Zach says, “I think the process was fair.

For us, we were very fortunate that a lot of planning went into the construction. Without things like the retention ponds at the training facility or the storm water filters at the stadium, I don’t think we could have passed. These were all things that were planned during construction.”

He also sees that that the process evaluates practices that sports turf managers are doing. “I would say a majority of the things sports turf managers should be doing already, like mowing with sharp reels/blades and walking the fields, are evaluated. I think the attesting process was great. We were able to get my advisor from college, Dr. Douglas Linde, to come attest for us. He was honest, fair and if he needed something explained he wouldn’t hesitate to ask. He was also a fresh set of eyes to look at some of the things we answered ‘no’ or ‘addressing’ to offer a solution.”

Zach went on to answer a number of questions about the program.

SportsTurf: Why did your sports field management team decide to pursue environmental certification for your two facilities?

Holm: We decided that we were going to pursue this environmental certification when it was announced at the STMA Conference in San Diego. Once the application was available in June we quickly worked to get the application submitted. We felt it was important to show our commitment to the environment.

SportsTurf: As sports field managers who work on natural grass fields, how

important is environmental responsibility to your employer and to your community?

Holm: I think environmental responsibility is very important to our club. Our stadium was built on an old brownfield site and sits close to water. Our training facility is surrounded by protected wetlands so it is our responsibility to be committed to the environment. For any professional team, I think it is important to be environmentally responsible as sports teams are often role models in their community.

SportsTurf: Tell us a bit about the environmental “climate” in New Jersey?

Holm: I think the environmental climate in New Jersey probably falls in the middle of the pack compared to the rest of the United States. When it comes to fungicides and other pesticides I think companies have an easier time getting labels approved in our state versus states like California and New York.

However, we have ProFact fertilizer laws in New Jersey that restrict our fertilizer usage amounts. Those new laws haven’t affected us a lot as we tend to shy away from large amounts of granular fertilizer that the laws target. A big part of the fertilizer law is zero phosphorus, which does affect us some. Other things like blowing fertilizer off of sidewalks and not applying it next to water are things everyone should be doing regardless of laws—just being good stewards of our environment.

I think because of our location we are under a little extra scrutiny for how we

manage our facilities. For example, at the training facility we have restrictions on how far past the fields we can mow to ensure we aren't disturbing the environmentally protected areas. I think by achieving these certifications it shows we are proactive and committed to being environmentally responsible.

SportsTurf: Has there been any reaction or recognition from your community, fan base or players?

Holm: We haven't gotten any reaction from fans or players but the front office staff have been very appreciative of our efforts. The coaching staff, with whom we interact daily, thought it was awesome. Now that the stadium was approved, hopefully the news spreads further and more awareness gets raised.

SportsTurf: What are the biggest challenges you face in managing safe, natural grass surfaces for your athletes?

Holm: I think the biggest challenge we face is wear. "Knock on wood" we haven't been hit with a bunch of concerts, but we get a ton of extra games and practices, which can add up quickly. It becomes extra tough when those games and practices are international teams who are set in doing things their way. Everyone always wants a goalmouth and to use the same part of the field. Fortunately for us we have a great coaching staff that we can get to shift things around in situations like this.

SportsTurf: Anything else that you see as an outcome of this certification?

Holm: We were really excited to be the first for these certifications. We are hoping that they can help springboard us to further enhance our status of leaders in the environment. Already being discussed are landscape renovations to add pollinator gardens and/or renovations to reduce landscape water use.

We are even hopeful that the sponsorship sales staff can use these certifications in discussions with other environmentally conscious companies when it comes to sponsorship sales.

To find out how you can pursue certification for your facility, go to STMA.org. **ST**

STMA Affiliated Chapters Contact Information

Mid-Atlantic Sports Turf Managers Association (MASTMA) – now forming.

If interested email nandrews@matraxinc.com or contact STMA, 800-323-3875.

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

Colorado Sports Turf Managers Association: www.cstma.org

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

Florida #3 Chapter (Central):
407-518-2347,
Dale Croft, dale.croft@ocps.net

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

Georgia Sports Turf Managers Association: www.gstma.org.

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

Iowa Sports Turf Managers Association:
www.iowaturfgrass.org.

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

Minnesota Park and Sports Turf Managers Association: www.mpstma.org
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Oklahoma Chapter STMA:
405-744-5729; Contact:
Dr. Justin Moss okstma@gmail.com

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Ozarks STMA: www.ozarksstma.org.

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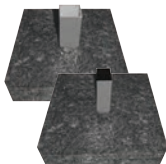
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Q&A with Pamela Sherratt

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DARIAN DAILY, A TRUE “VOLUNTEER”

In 1977 Harry Gill, field manager at Milwaukee County Stadium, started sending out Christmas cards to fellow groundskeepers throughout the country, soliciting a movement to come together as a group. Not long afterward, Dr. Bill Daniel, professor emeritus at Purdue University, hosted an annual turf conference at Purdue and added a sports turf session. He invited Dick Ericson (field manager at Metropolitan Stadium in Minneapolis), George Toma (NFL and Kansas City Royals and Chiefs), and Harry Gill to speak. The sports turf session was a huge success, and so the following day, Harry, Dick, George, and Dr. Daniel founded the Sports Turf Managers Association! Not surprisingly, the most prestigious Founders Awards, given at the STMA banquet each year, are named after these four men.

The formation of STMA by these volunteers was monumental. Each one of them had full time jobs and families but still donated their precious time to the cause. They had humble beginnings indeed, sharing office space and an executive secretary with the National Institute of Parks & Grounds Management and holding the first national STMA conference in 1986 in conjunction with Golf Course Superintendents Association of America in San Francisco. As with any new organization, it was made up entirely of volunteers; the first official STMA office was housed in the garage of the late Dr. Kent Kurtz.

STMA has come a long way since then, and today is operated from dedicated offices in Lawrence, KS by CEO Kim Heck and her staff. Over the years, STMA has grown exponentially in member numbers (from 300 to around 3,000), and has added a lot more services to the member benefit portfolio.



There's no doubt that STMA is seen as a highly professional association and the official voice of sports turf industry professionals. At the heart of STMA's operation though, it still relies heavily on volunteers to step up to the plate and serve on a committee or on the Board. The types of people who volunteer in this way, who want to make a positive impact on the sports turf industry, exhibit special qualities. What are those personal qualities? How can I describe them?

On August 27 this year Cincinnati Bengal head groundskeeper Darian Daily passed away at much too young an age. I bring Darian up not because he was a good friend—which he was—or because he was so well known in the industry, which he was. I bring him up because he represented the characteristics and qualities that make a good volunteer. Darian graduated from Middle Tennessee State University with a degree in plant and soil science in 1992. He started his field management journey at the Winston Salem Spirits, before progressing to Columbus Crew SC, and finally to the Cincinnati Bengals in 2003. His career goal was to work in the NFL, which he obviously achieved, and by any measure Darian was a highly successful head groundskeeper at the pinnacle of his career. The story could end there, but it doesn't.

Darian joined STMA in 1996 and immediately jumped in to volunteer. He was also President of the Ohio STMA Chapter (OSTMA) from 2001-2002. He served on Membership and Conference Committees and was elected to serve on the STMA board from 2005 to 2006. He chaired the Information Outreach Committee from 2007 until his death. He was STMA's technical liaison to the American Sports Builders Association,

taking the lead on review of and content for their technical materials that involved sports fields, specifically for ASBA's *Sports Fields: A Construction and Maintenance Manual*.

In addition to his STMA service, Darian created, along with Tony Leonard of the Philadelphia Eagles and Dr. Andy McNitt of Penn State, an annual seminar for NFL groundskeepers, believing that they could enhance their profession by coming together each year. He also had a passion for painting fields and oversaw many field-painting jobs at college football bowl games each winter, including BCS Championship games. Whether it was painting fields with his friend and colleague, James Hlavaty, testing new bermudagrass cultivars, or trying out new maintenance practices (he was one of the first in the USA to fraze mow his fields), Darian believed wholeheartedly in sharing his findings and his knowledge at conferences, in classrooms with students, and on social media. He was a team player, and as Matt Duncan, CSFM, recently said, "If you met him once, he was your friend."

For his service to the STMA and the industry, Darian received the OSTMA Founders Award in 2004, the STMA Dick Ericson Founders' Award for 2011, and he was recognized with the Professional Excellence Award at the 2014 OTF Conference. Many more accolades were bestowed upon him over the years, but he was far too humble to tell you about them. At the center of Darian's world were his wife, Carole, and their two children. He was first and foremost a family man, but his boundless energy and passion allowed him to give back so much to the sports turf industry that he loved.

Darian represented the qualities found in a volunteer — energy, a sense of duty, reliability, selflessness, passion, and an ability to be a team player. And he was, actually, a volunteer in every sense of the word, because he was also a lifelong University of Tennessee fan, a true "Volunteer." He will be missed greatly by many. **ST**

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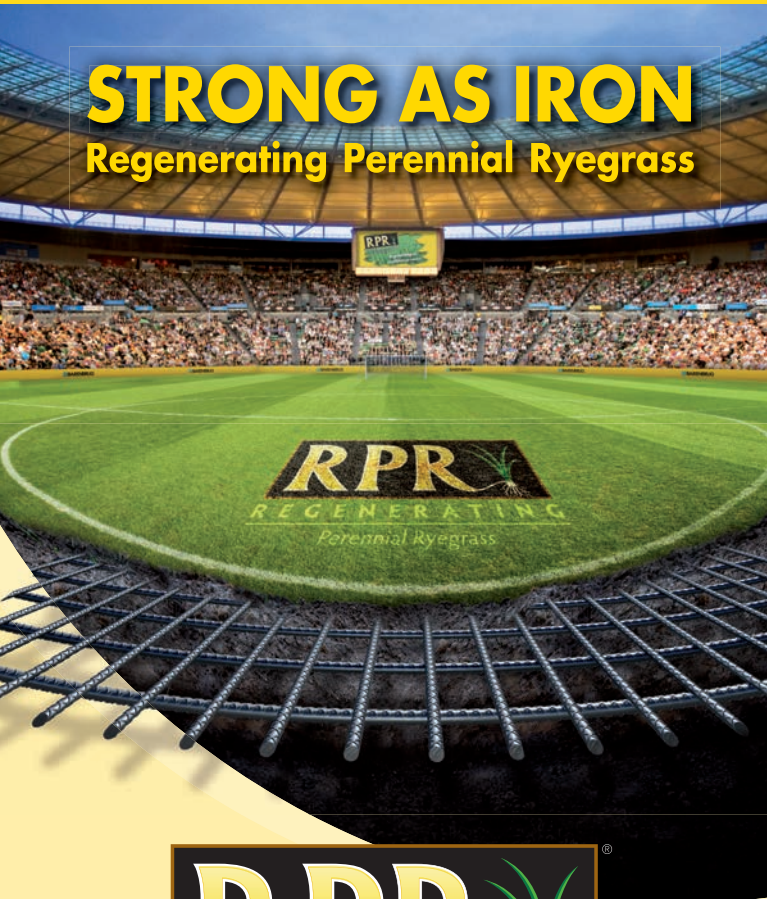
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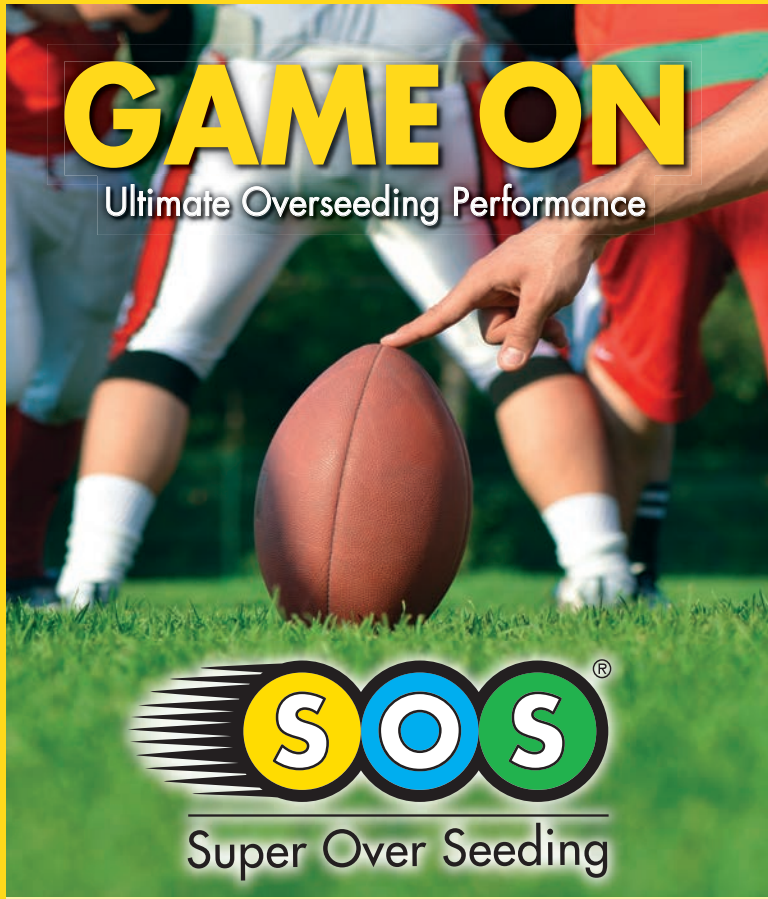


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