IN THIS ISSUE: Infinity Park: Pro Sporting Grounds FOY winner

THE OFFICIAL PUBLICATION OF THE **SPORTS TURF MANAGERS ASSOCIATION**

SportsTurf

DECEMBER 2017

SPORTS FIELD AND FACILITIES MANAGEMENT / www.sportsturfonline.com

NO CONTEST:

Atlee HS, Mechanicsville, VA wins another FOY

See pg 44

ALSO INSIDE

- Wetting agents: a case for full-field apps
- Selecting turfgrasses and mowing practices to mow less
- Pam Sherratt on snow mold

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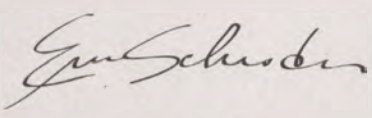
FROM THE SIDELINES

Breeders working hard for you

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

ON PAGE 12 OF THIS ISSUE is an update from some turfgrass breeders on what's happening in their worlds. Here's another response, from Yanqi Wu, PhD, professor, grass breeding and genetics, Oklahoma State University:

Q: Are you always actively breeding some species of turfgrass?
Wu: Yes, I breed bermudagrass for turf use. Bermudagrass species include common bermudagrass and African bermudagrass. That is a major part of my job appointment.
Q: What characteristics are you currently working to improve, in what turfgrasses?
Wu: We, the Oklahoma State University turfgrass improvement team, are working on turf quality, host plant resistance to abiotic (cold, drought, shade, traffic, low mowing), biotic (spring dead spot, leaf spot, nematodes), and production traits (sod tensile strength for vegetatively propagated cultivars and seed yield for seed-propagated ones).
Q: What's the hottest topic in turfgrass breeding now?
Wu: There are a few exciting topics in the turfgrass breeding world. Turf bermudagrass breeders released several superior cultivars. Latitude 36 and NorthBridge turf bermudagrass from our program have been widely embraced in the turf industry. TifTuf from the UGA bermudagrass breeding program has been produced in large acres in the South. We recently released OKC 1131 turf bermudagrass combing high turf quality, cold hardiness and drought resistance. [And] there are other turf breeders with new, exciting cultivars.
Q: Explain how a new cultivar gets to market: breeder, tester, grower, marketer?
Wu: It is a quite long journey from breeding raw germplasm into a new cultivar, averaging 10 years or longer. Breeders play a game of numbers, producing experimental genotypes as many as they can with their best germplasm and with their ideal dream of cultivars in their mind. We will perform tests to select elite plants and send them to turfgrass scientists for them to test further on specific characteristics. And then we will send best selections into the National Turfgrass Evaluation Program (NTEP) national tests for testing performance and adaptation in multiple locations over years (normally 5 years each test). Marketers will purchase a license of best vegetatively propagated cultivars and sublicense them to sod growers for producing sod on sod farms. There are large variances in each step in terms of specific operations among breeding programs.
Q: What's the biggest change in turfgrass breeding over the past 5 years?
Wu: With funding from the USDA Specialty Crops Research Initiative, turfgrass breeders are able to collaborate with each other and collaborate with turf scientists, agronomists, physiologists, plant pathologists, extension specialists, social-agri-economists, colleagues from the turf industry, like leaders from US Golf Association, NTEP, Turfgrass Producers International, and many producers. We need to continue this trend to plow in funds supporting research. The outcome of research will directly benefit the turf industry and the society. I hope more federal funding agencies like USDA will support turf research work. I hope sports turf industry can develop a research-funding program to support turf research for sports fields as well. **/ST/**



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PRESIDENT'S MESSAGE

Professionalism, why me?

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

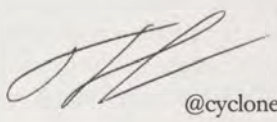
FALL SPORTS ARE DONE, and we move onto winter sports. It seems like there is never a shortage of work in the so-called "off season." For us at Iowa State University, we move onto indoor track, equipment maintenance, and snow removal. We also start our planning for the upcoming season while our successes and failures are fresh in our minds. By far my favorite part of the off season is winter conferences and trade shows. Like many of you, I get to participate in our local shows and the STMA Conference and Exhibition. It is an opportunity to network, solve problems, and learn from one another. I believe conferences and trade shows are the most important things that take place for our industry to continually evolve and grow.

I cannot recall a year of conferences and trade shows when the word "professionalism" did not come up in conversation. It seems that everyone has an opinion on what we should be wearing, how we should act, and mostly complaints about not being respected. Please allow me to share my opinion on this subject, and share some of the strategies I think each of us should embrace. Professionalism: it starts with what we wear and ends with how we act.

I am 100% a jeans-and-t-shirt guy. I embrace simple and pay no attention to styles and new trends in clothing. When it comes to work, I simply do what is best for me professionally and what is best for our industry. I have a new role at Iowa State where I now have more meetings with ADs, architects, and engineers. I also do many of my old tasks that require me to "get dirty." On days when I do both, I bring a change of clothes. Our industry has been fighting for a "seat at the table" when it comes to making decisions that affect athletic fields. We cannot mess this up by wearing work clothes to a meeting where everyone else will be in business or business casual attire. For conferences, business casual should be the minimum. Our industry is blue collar, but it does not have to look like that when we are together and learning or meeting with folks who are not blue collar!

To be respected within the work place, we must act in a manner that can be respected. Most all of us are passionate about what we do. Sometimes that passion can boil over to anger, resentment, and make us difficult to work with. We must be aware of how we treat our employees, our co-workers, and most of all, our patrons. We must always act in a way that we would want our employees to imitate and that our superiors would approve. To be respected, you first must be respectful!

The STMA is a professional organization made up of professionals. We are also a professional organization that is here to help one another. If there is, anything that STMA Headquarters or I can do to help you, please let us know. **/ST/**



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Managing sports turf using wetting agents: a case for full-field applications

// By SAM BAUER

Example of localized dry spot on a Minnesota sports field.

Sports turf managers are faced with the challenge of maintaining safe and playable turfgrass surfaces while reducing inputs such as fertilizer and water. In particular, water conservation has become a hot topic for all turf managers and will continue to be an important issue as drought events increase in frequency and severity. Reducing water use, resulting in playing conditions that are unsafe for athletes, may negatively impact sports turf performance. Consequently, optimizing water management is key for achieving a balance between conservation and functional and playable sports fields.

Turfgrass water use is impacted by a number of different factors including species and cultivar, management practices, and soil type. For example, low mowing heights will promote increased

water use and turf grown in sand-based rootzones requires more frequent irrigation due to a lack of water-holding capacity. Although sand-based rootzones have many beneficial characteristics, managing fields high in sand content can be challenging particularly during dry, hot conditions. Hydrophobicity (the repelling of water) is one of the most common issues of turf grown in sand and can result in 'hot spots' that tend to dry out faster compared to other turf areas. Wetting agents are commonly used to manage this situation. Although hydrophobic areas are less common in native soils or rootzones with minimal sand, wetting agents can still aid in water management of these soils.

Wetting agents work by reducing the surface tension of water, allowing greater infiltration into the soil surface and increased percolation through the soil profile. In hydrophobic soils, wetting agents work by restoring the bond between the nonpolar organic coatings on soils and the polar water molecules. In saturated soils, wetting agents can help to increase percolation of water by reducing the attraction of water molecules to themselves; this occurs via the reduction in cohesive forces (aka surface tension) of water molecules. In the case of increasing soil moisture uniformity, a single wetting agent may be effectively making dry areas wetter and wet areas drier. Overall, this could result in decreased water use, improved water conservation and more consistent playing surface.

As a water management tool, wetting agents can also indirectly result in increased rooting depth and density (in turn improving water conservation), reduced disease infection that can impact turf playability (by reducing prolonged leaf wetness duration), and improved moisture holding capacity of infield skins (which can improve playability). In addition, recent research at the University of Minnesota suggests that wetting agents may improve surface firmness and help to reduce winter damage of turf surfaces. Sports turf managers may find it challenging to translate research data supporting these claims because a majority of wetting agent research has been focused on golf course turf; however, recent finding supports the application of wetting agents to entire fields versus only applying to specific, problematic turf areas.

Influence on surface firmness

Over the past 4 years, researchers at the University of Minnesota have been investigating the influence of wetting agent applications on the firmness of sand-based putting greens. As has been shown repeatedly, there is an inverse relationship between the degree of soil wetness and firmness of a turf surface (i.e., more water results in a softer playing surface). Softer playing surfaces on sports fields may manifest several issues including increased susceptibility to damage from athletes and reduced surface stabilization, which can result in athlete injuries. In an ideal sports turf situation, using wetting agents on an entire field would provide a firmer playing surface following a significant rainfall event and help promote uniform wetting of turf surfaces.

Sam Bauer, University of Minnesota Extension.

Under dry conditions, wetting agents may help with holding moisture at the surface, thereby improving cushioning and player safety. Our research results have demonstrated that wetting agents will impact firmness; some create softer surfaces and some firmer, depending on the chemistry, and some actually do both depending on the moisture status of the soil. Further research is needed to evaluate variations in wetting agent performance associated with environmental and climate factors.

To reduce winter injury

An emerging trend in turf wetting agent use has been making applications later in the season with the goal of improving winter health and spring recovery. In northern climates where irrigation systems are winterized, the strategy has been to apply a wetting just before irrigation blowout, with the anticipation that the wetting agent will be present in the soil throughout the winter months and into the spring. In southern climates, wetting agents are more commonly being applied throughout the winter months to improve soil moisture conditions during this unfavorable growth period for warm season grasses.

Late fall applications in the north

Winter injury of cool-season grasses is an interesting and often puzzling phenomenon. If we analyze the various mechanisms for winter injury, we find that a majority of them are moisture related. Desiccation is the drying of rootzones and turf crowns to the point of death. Crown hydration and ice cover injury occur due to excessive moisture buildup on turf surfaces, and moisture

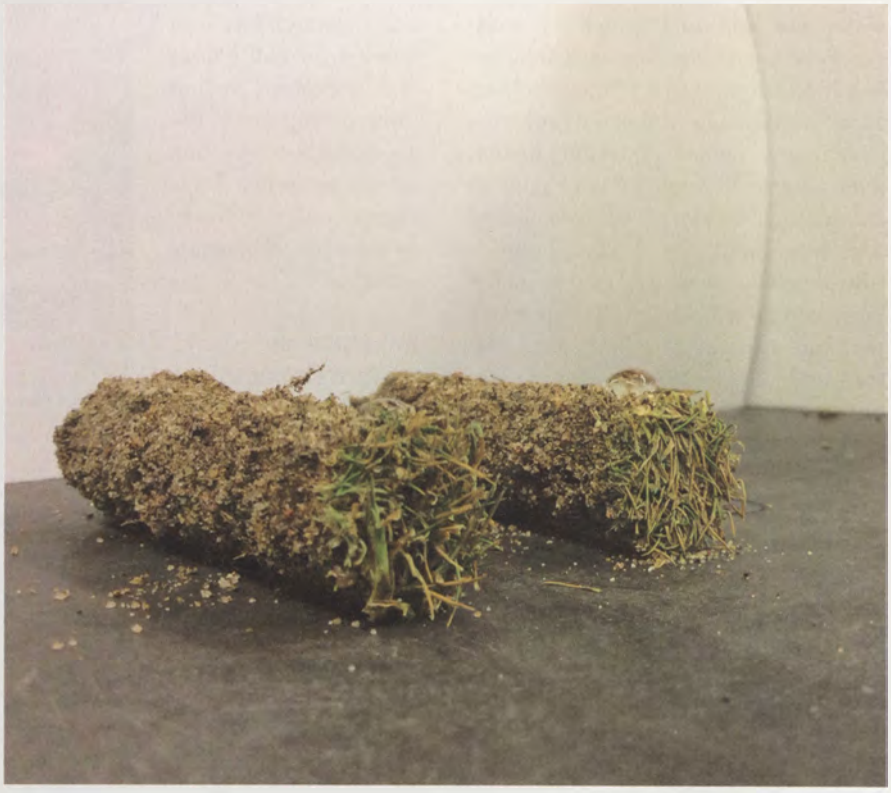
at the surface can also contribute to a greater incidence of snow mold.

If wetting agents influence the moisture status at shallow depths, they have the potential to reduce these winter-related problems. There is no research to support this, however in theory, products geared towards hydration should be used where desiccation is a concern, and infiltration type products will likely benefit with surface moisture issues. In reality, you may find one product that achieves both of these goals, as discussed above.

The question I am often asked regarding late-fall applications is how long will they persist throughout the winter. The breakdown of wetting agents in the soil is influenced by microbial activity, and temperature is the primary driving force for this. In the late-fall and winter when soil temperatures are low, we have found persistence well into May from mid-October applications of various chemistries in Minnesota. We are just beginning to study the impacts of soil temperature on wetting agent breakdown, but when soils are cold, persistence for six months or more is very possible. Research on wetting agent persistence and soil temperature will also help inform turfgrass managers about optimum frequencies for wetting agent applications throughout the growing season.

Late fall and winter apps in the south

One could argue that coming into and out of winter is the most critical time to ensure an adequate moisture status for warm season turfgrasses. Shallow root systems, coupled with slow growth and recovery make moisture management at this time of utmost importance. Could wetting agents at this time be of any benefit? Researchers at the University of Arkansas recently investigated the impacts of wetting agents on winter survivability of bermudagrass, finding that a single late-fall applied wetting agent can dramatically improve spring greenup and survivability of bermudagrass in a sand-based putting green. Unfortunately, these results were not consistent from one year to the next, but no deleterious effects were ever observed from wetting agent applications at this timing. For sports fields, whether overseeded or not, proper selection and application of a late-fall or winter wetting agent will likely provide many benefits for the health and playability of your surfaces.



WATER DROP PENETRATION TESTS ARE A STANDARD PROCEDURE FOR ASSESSING THE LEVEL OF HYDROPHOBICITY OF A TURFGRASS ROOTZONE. TO CONDUCT THIS TEST, CORES ARE AIR DRIED FOR 2 WEEKS, A DROP OF WATER IS PLACED ON THE CORE, AND THE TIME FOR PENETRATION OF THE DROPLET WILL DETERMINE THE LEVEL OF HYDROPHOBICITY.

Final considerations

Wetting agents are not created equal and the most appropriate product for your situation will be based on your experience, trial and error, and data collection. By promoting a healthy turf stand through efficient water use, it may be possible to reduce pesticide and fertility applications while continuing to maintain safe, functional and playable surfaces.

This article intentionally avoided the discussion of specific products because there are simply too many to discuss. Initial studies focused on the impact of wetting agents on surface firmness and applications later into the fall and winter are very promising. Stay tuned as this work progresses and be sure to advocate for this type of research with your local land grant institution. For more information about this and other projects at the University of Minnesota, please visit our blog at *turf.umn.edu.* **/ST/**

Sam Bauer is Extension Educator-Turfgrass Science, University of Minnesota Extension.

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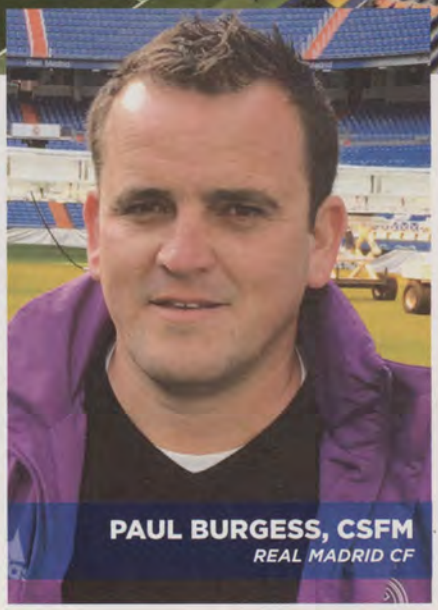

PAUL BURGESS, CSFM
REAL MADRID CF

Paul Burgess, CSFM, has served for nearly nine years as the Head Groundsman for Spain's legendary Real Madrid CF at Santiago Bernabéu Stadium and its 14 training pitches. Named the "Most Influential Figure in the Turf Care Industry" by Turf Business magazine, Burgess was the first in European to earn a Certified Sports Field Manager certification as well as the first European turf manager to be awarded an STMA Environmental Certification.

It's no wonder that he was the very first turf professional in Europe to purchase an Air2G2 Soil CPR machine. Burgess first heard about the Air2G2 at the 2013 STMA Show in Daytona Beach, Florida. After watching a demonstration by Glen Black, inventor of the Air2G2 and founder of GT AirInject Inc., Burgess was impressed by the technology.

"The idea didn't' take any selling. I got the idea straight away," Burgess said. "It's a brilliant machine, it does exactly what it says it does."

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Turfgrass breeders are working for you

Dr. Brian Schwartz, right, associate professor at the University of Georgia, with his predecessor and mentor, Dr. Wayne Hanna.

Editor's note: We recently caught up with a few turfgrass breeders and asked a few questions. Thanks to Brian Schwartz, PhD, associate professor, University of Georgia; Steve Reid, chief breeder & research director USA, DLF Pickseed; and Dr. Stacy Bonos, professor, Department of Plant Biology, Rutgers University:

Brian Schwartz, PhD

Are you always actively breeding some species of turfgrass?

I have a 100% turfgrass breeding appointment and am always working on making/evaluating new hybrids. The two breeders before me in Tifton were primarily forage breeders that also gave some attention to turf, but it wasn't their priority.

What characteristics are you currently working to improve, in what turfgrasses?

I am always working on drought tolerance in bermudagrass, zoysiagrass, and centipedegrass; that is my primary focus. We are also working on increasing the recuperative potential in zoysiagrass, as well as disease tolerance. We have been testing the traffic tolerance of our most elite bermudagrasses and zoysiagrasses each fall for the past several years. I am also trying to develop dwarf bermudagrasses and zoysiagrasses for golf greens. To some degree, I'm trying to reduce the mowing requirements of bermudagrass, zoysiagrass, and centipedegrass by developing new hybrids that have less upright growth.

What's the hottest topic in turfgrass breeding now?

Drought tolerance is a hot topic that receives the most funding. Developing new grasses for golf greens is always talked about, but my program doesn't receive much funding for this. Unfortunately there hasn't been funding to specifically work on grasses for sports fields, although we think it is very important and try to screen as many hybrids as we can to gauge this trait during the breeding process.

Explain how a new cultivar gets to market: breeder, tester, grower, marketer?

Perennial grasses usually take some time to properly evaluate. Typically, the grasses developed in Tifton have been tested between 12 and 22 years before release. Our program screens approximately 5,000 new hybrids every year. We research the best hybrids, i.e., those with good initial persistence and uniformity, for many years make observations of drought tolerance, disease resistance, insect tolerance, mowing requirements, and turf quality/performance. Toward the end of our in-house evaluation process, we typically test the most elite hybrids in many locations across the southern US and the parts of the transition zone. This has been done through the National Turfgrass Evaluation Program (NTEP) as well as with collaborators. When we identify a hybrid that we want to release, the cultivar release committee at the University of Georgia reviews it, and if approved, a bid for license is put forward to the turf industry.

If successfully licensed, the new cultivar is expanded by Georgia Seed in a foundation field and then distributed to the licensee in larger quantities. At this point, it is up to the new licensee to produce, market, and sell the new hybrid. If their business plan included finding other growers across the US or world, then they also work on that.

What's the biggest change in turfgrass breeding over the past 5 years?

The biggest change in the process of warm-season turfgrass breeding over the past several years has probably been the collaborative efforts between many turfgrass breeders that are a result of consistent federal funding during the recent past. The USDA-SCRI projects that have jointly funded turfgrass breeding, research, and extension for both warm- and cool-season turfgrass has allowed wide-spread evaluation of many new hybrids in environments in Texas, Oklahoma, North Carolina, Georgia, and Florida. Three new cultivars have been released as a result of this work so far, and there are plans for more to become available in the near future.

Steve Reid, Chief Breeder & Research Director USA, DLF Pickseed.

Steve Reid

Are you always actively breeding some species of turfgrass?

Yes, I am the Research Director USA for DLF. I breed turf tall fescue and bermudagrass and have recently taken over the perennial ryegrass again. From 2013 to 2016, a colleague of mine was responsible for the breeding of perennial ryegrass for the company. Another colleague is responsible for bentgrass and fineleaf fescue. We have stopped breeding Kentucky bluegrass in the US and will source our material from Rutgers University and our European colleagues where appropriate.

What characteristics are you currently working to improve, in what turfgrasses?

In all species of turfgrass we are concentrating on two general types: sports turf and low input. As for sports turf, we concentrate on wear/traffic tolerance, shade tolerance, and low mow height tolerance. In bermudagrass, we concentrate on aggressive stolon development (wear/traffic tolerance) and cold tolerance. As for low input, we strive for adequate turf quality under drought (low water use), low fertility, no-fungicide, salt tolerance/reclaimed water.

What's the hottest topic in turfgrass breeding now?

I think it is low input sustainable turfgrass. Lower water and nitrogen use. In tall fescue, specifically, it is wear/traffic tolerance and low mow height. I believe this species will see increased used in sports turf moving forward. Improved varieties are showing great characteristics that will make sports turf managers rethink the use of tall fescue.

Explain how a new cultivar gets to market: breeder, tester, grower, marketer?

Historically, we have developed turf varieties based on the NTEP testing cycle. In all turfgrass species we develop new population each years as part of our species improvement program. In the main species (tall fescue and perennial ryegrass) we would develop 14-18 new populations each year and release 10-12 populations every 6 years (NTEP cycle). We then enter approximately 16-18 populations into the NTEP and then provide seed of the better population to our production department, who intern provides the seed to a seed stock grower (farmer) to increase the amount of seed available for planting new fields. After 4-5 years of seed increase, limited seed is available to market through our distributers.

What's the biggest change in turfgrass breeding over the past 5 years?

Increased emphasis on trait specific breeding, which increased the specific trails that the end users' desires. By increasing the emphasis on a limited number of traits, we are able to increase the performance of the specific trait without losing other desirable traits such as color, density, leaf texture. We have also placed increase emphasis on seed yield, without sacrificing desirable traits.

Dr. Stacy Bonos

Are you always actively breeding some species of turfgrass?

Yes. We work on 11 different species of grass. We conduct a cycle of selection every year.

What characteristics are you currently working to improve, in what turfgrasses?

Historically the characteristics were low growth, high shoot density, dark green color. We have pretty well accomplished that in the last 50 years of breeding these grasses. We are always working on disease resistance (which is a huge part of our breeding program), stress tolerance (drought and heat) (this is our most current focus). Tall fescue is probably the most versatile grass we have for home lawns. It has relatively few pest problems and has

Dr. Stacy Bonos, professor, Department of Plant Biology, Rutgers University.

good drought tolerance. We are trying to improve drought tolerance in this species by using a rainout shelter that we can keep the rainfall off of. We have tall fescues that can survive 75 days (in the summer) without water. We select these, intercross them and hope that the next generation carries those genes to the progeny.

Disease resistance is also a big part of our breeding program. Each species has its own specific disease problems. For example, brown patch resistance in tall fescue, summer patch resistance in hard fescue, summer patch and rust resistance in Kentucky bluegrass, gray leaf spot, dollar spot and leaf spot in perennial ryegrasses, dollar spot resistance in creeping bentgrass. There are many other examples too. New Jersey is a good environment to select for disease resistance because of our climate. The hot and humid weather of the summer months is conducive to disease development on plants so diseases are easy to come by. Therefore we have the ability to screen our plant material very easily, sometimes without inoculation. This would be very different if we were in an arid environment.

What's the hottest topic in turfgrass breeding now?

I would say the hottest topic in breeding now is the drought tolerance work we are doing and also figuring out how to utilize some of the new technology like infrared cameras, other remote sensing devices (NDVI, etc.) to help improve our selection ability for characteristics that are difficult to breed for. **/ST/**

Selecting turfgrasses and mowing practices to mow less

// By QUINCY LAW AND AARON PATTON, PHD

Signed mowing treatments from Purdue's Turf and Landscape Field Day.

Mowing remains one of the most fundamental and energy-intensive cultural practices in maintaining turf. Even with adequate moisture, fertility, and pest control, incorrect mowing can be detrimental to plant growth, function, and persistence. Mowing is a plant stress, even when done correctly: it removes green tissue, thereby reducing the plant's ability to undergo photosynthesis and produce energy. Furthermore, mowing too low or too often can reduce turf rooting. To prevent the stresses of mowing too often or not often enough, it is recommended to mow frequently enough as to not remove more than one-third of the leaf blade in a single mowing, which is known as the "one-third rule."

Turfgrass selection

Turfgrass selection is an important consideration when attempting to reduce mowing requirements. This is especially true when mowing frequency is based on growth rate, as it is with the one-third rule. Regrowth following mowing also impacts the mowing frequency of turf as the faster plants are able to regrow, the more often they

Editor's note: Full "Materials and Methods" information and Reference List are available at www.sportsturfonline.com

will need to be mown. Turfgrass regrowth is correlated to not only the residual leaf area after mowing but also the carbohydrate food reserves in the remaining verdure; verdure is essentially how much turf is left above the soil surface after mowing.

Grass clippings

The management of grass clippings is another important and often overlooked aspect of mowing. At one time, the practice of returning grass clippings was thought to contribute to thatch accumulation and, as a result, clippings were routinely collected. Moreover, grass clippings can be collected to prevent the unsightly clumps of clippings when wet and/or long turf is mown.

A decrease in landfilled grass clippings and increase in clippings being returned to turf has occurred for a multitude of reasons. First, 25 states have banned yard trimmings from landfills. Second, concerns over thatch production due to returning grass clippings have since been dismissed due to research demonstrating the rapid decomposition of grass clippings. Third, returning grass clippings improves the color of turfgrass compared to removing clippings. In fact, reducing N fertilization by half will not decrease turfgrass color when clippings are returned. Other researchers have noted increases in nitrogen use efficiency, nitrogen uptake, and overall dry matter yield as the benefits of returning grass clippings. Lastly, returning grass clippings to a turfgrass system over an extended period of time (>25 years) has been will reduce nitrogen requirements by 50% through the accumulation of soil organic nitrogen over time.

A fast-growing tall fescue cultivar photographed in May. It is the weekly mown plot with clippings returned and illustrates that mowing once weekly is insufficient during periods of rapid growth.

Research was recently completed at Purdue University to better understand the impact of turfgrass species and cultivar selection as well as clippings management on mowing requirements. The objectives of this research were to determine: (i) the number of required mowing events when mowing weekly versus using the one-third rule, (ii) the influence of returning grass clippings on mowing requirements, dry matter yield, and leaf nitrogen content; and (iii) if turfgrass species and cultivars with differing growth rates influence mowing requirements, dry matter yield, and leaf nitrogen content.

In this irrigated field experiment, mowing events were significant for all main effects (i.e., species, growth rate, mowing frequency, and grass clippings management) in both years of the experiment. Tall fescue required more annual mowing events than Kentucky bluegrass. The fast-growing cultivars required the greatest number of annual mowing events (25 in both years), which was followed by the moderate-growing cultivars (23 in both years); the slow-growing cultivars required the fewest mowing events. Mowing based on the one-third rule (18 events in both years) reduced the number of mowing events compared to weekly mowing, and returning grass clippings resulted in a greater amount of mowing events versus collecting clippings.

In an evaluation of the interaction of the factors in our experiment, the influence of mowing frequency is readily apparent. All of the weekly-mown plots, regardless of species, growth rate, or grass clippings management, except for the slow-growing Kentucky bluegrass plots, required more mowing than all of the plots mown by one-third rule. The slow-growing Kentucky bluegrass cultivar mown by the one-third rule with clippings collected had the fewest mowing events in 2013, with only 12.3 annual mowing events.

For the 2-yr cumulative dry matter yield of the weekly-mown plots with clippings collected, species, growth rate, and the species by growth rate factors were all significant. Tall fescue had a greater dry matter yield than Kentucky bluegrass. The fast-growing cultivars had the greatest dry matter yield, followed by the moderate-growing cultivars; the slow-growing cultivars had the lowest dry matter yield. For the interaction of species by growth rate, the fast- and moderate-growing tall fescue cultivars had a greater dry matter yield than all of the Kentucky bluegrass cultivars. However, the slow-growing tall fescue cultivar had a similar dry matter yield to that of the fast-growing Kentucky bluegrass cultivar. The fast-growing Kentucky bluegrass cultivar was also similar to the moderate-growing Kentucky bluegrass cultivar, and the slow-growing Kentucky bluegrass cultivar had the lowest dry matter yield of all treatments.

More findings

It was evident from out experiment that mowing requirements can be influenced by a number of factors. By selecting slow-growing turfgrasses, mowing requirements can be reduced for the life of the turf. Unfortunately, slow-growing cultivars can be slower to establish and recover from injury. Future cultivar experiments on growth rate would be beneficial for both the establishment of low-maintenance areas where reduced mowing is desired and also for high traffic areas such as athletic fields where quick recovery is desired.

In this experiment, the one-third rule reduced mowing requirements by 31% (a reduction of approximately 8 mowing events per year) compared to when turf was mown on a weekly basis; this reduction was obtained without an unacceptable reduction in turfgrass appearance. In addition to reducing labor, a lower mowing requirement reduces fuel use and thus decreases costs and greenhouse gas emissions.

Root-growth stoppage can occur when between 40 and 50% or more foliage is removed. Considering that growth rates as fast as 0.5-inch per day were observed during this study (personal observation), grasses mown by the one-third rule at a height of 2.5 inches have the potential to move from one-third removal into the potentially root-stopping 40 to 50% removal range in 1 day. Thus, turfgrass managers should closely monitor turfgrass growth if they plan to mow based on a removal rule, especially during periods of active growth. Though the practice of returning grass clippings increased the number of mowing events by about two events annually, the increased leaf nitrogen content concentration as well as the increased soil carbon and nitrogen resulting from returning clippings are benefits that offset these additional mowing events. Additionally, returning grass clippings saves time compared to when clippings are collected and removed. As such, returning grass clippings should continue to be a recommended practice.

Photograph of the experimental area at Purdue University's W.H. Daniel Turfgrass Research and Diagnostic Center.

JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL

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ANSWER ON PAGE 37

CAN YOU IDENTIFY THIS SPORTS TURF PROBLEM?

PROBLEM:
New sod is brown

TURFGRASS AREA:
Professional baseball stadium

LOCATION:
Miami, Florida

GRASS VARIETY:
Sod area is 419 bermudagrass and the rest of the field is seashore paspalum

Close-mown fields like this one need more frequent mowing than the treatments tested in our study that were mown at 2.75 inches.

Our dry matter yield values were comparable to previously published tall fescue and Kentucky bluegrass data from the same geographic location that received similar annual nitrogen rates. Furthermore, our findings support previous research that indicates that returning grass clippings increases dry matter yield. Dry matter yield increases of 27 to 45% were obtained in our study. The influence of turfgrass species and growth rate on dry matter yield was also apparent in our study, and our data supports previous findings that tall fescue generally produces greater dry matter yield values than Kentucky bluegrass. Furthermore, others have noted greater dry matter yield values for faster-growing cultivars, which was observed across all species in our experiment.

Cool-season turfgrasses are often cited to have a bimodal seasonal growth pattern that includes a strong flush of growth in spring, cessation of growth over summer, and moderate growth in autumn. However, our dry matter yield values were highest in spring, intermediate in summer, and lowest in autumn both years. It is logical that our spring dry matter yield values were the highest, given that approximately two-thirds of tall fescue growth is said to occur during the spring and that as much as 75% of the annual growth for Kentucky bluegrass can occur by early summer in unirrigated areas. However, the autumn flush of growth was not readily apparent in our irrigated study.

Our dry matter yield measurements did not account for plant root growth or tillering, which may be another reason why our growth measurements are not entirely consistent with the commonly accepted bimodal seasonal growth pattern of cool-season turfgrasses. Further, the cool autumn weather of late September through to November dramatically slows shoot growth and reduces the overall autumn dry matter yield. It is during these cool autumn periods that cool-season grasses such as Kentucky bluegrass build a carbohydrate storage reserve rather than directing energy to leaf growth. Additionally, our experimental area was irrigated, so summer yields were likely to have been higher than nonirrigated turf, which may have masked the fall flush of growth typical of cool-season grasses. Growth potential and yield estimates are a current topic of interest among turfgrass scientists, as this information is critical to not only refine mowing practices but to also nutrient recommendations. Growth rate is dependent on season, temperature, rainfall and irrigation, nitrogen, PGRs, and other factors such as soil nitrogen mineralization. These factors still need explored further in order for us to predict and model turfgrass growth.

Increased leaf nitrogen was the result of returning grass clippings in our study and highlighted the important role that grass clippings management plays in nitrogen cycling in turfgrass systems. To reduce nitrogen fertilization requirements, turfgrass managers should return grass clippings when mowing.

The results of this study highlight the importance of turfgrass selection (i.e., species and cultivar), mowing frequency, and grass clippings management for annual mowing requirements. This research also provides specific management practices that homeowners and professional turfgrass managers can use to reduce their mowing requirements, namely mowing by the one-third rule and selecting slow-growing cultivars of the turfgrass species best adapted to their location. While selecting slow-growing cultivars will help reduce mowing frequency, their use should be limited to low-use (traffic) fields. Use cultivars with faster growing (recovery) rates and proven traffic tolerance in high-traffic fields to improve chances for success. **/ST/**

This research was supported by the United States Golf Association and the Midwest Regional Turf Foundation. A full description of this research was published recently in Crop Science: Law, Q.D., C.A. Bigelow, and A.J. Patton. 2016. Selecting turfgrasses and mowing practices that reduce mowing requirements. Crop Sci. 56:3318-3327.

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Bringing turf education to high schools

// By STEVE E. PEELER, CSFM

Starting in spring of 2018, Sports Turf Management courses will enter into the standard curriculum of Bunker Hill High School and other high schools in Catawba County, North Carolina. Principal Dr. Jeffery Isenhour and Mark Storie, who is the CEO of the new K64 program for Catawba County Schools, presented the idea to Dean Gary Muller (Business, Industry, and Technology) at Catawba Valley Community College (CVCC), Hickory, NC.

Turf students at Catawba Valley Community College.

Surrounding high schools are invited to attend and have the opportunity to take classes within the last two blocks of the school day. The initial planning stages for the program started in early August 2017 and would concentrate on course that will expose the interested students that would want to pursue a career in Golf Course Management or Sports Field Management or other related careers in the industry. There are requirements that have to be met for students to enroll in this course. A student must have a 3.0 minimum average, good attendance, and an honorable standing conduct with the school system. I am responsible for designing the courses that would be taught in coordination with CVCC's Turfgrass Management curriculum.

During initial discussions, it was seen to be a great opportunity to expand all aspects of Turfgrass Management careers for juniors and seniors, where they would be placed on a high school pathway and earn a certificate for passing the course and later applying these classes to earning a degree at CVCC's 2-year A.A.S. program, which would also give them an additional option of double majoring in turf and horticulture in a reduced amount of time.

Additionally, the students would be taught in a very professional and progressive setting that would allow labs to take place on Bunker Hill High School campus. Presently, there are athletic fields that would serve as renovation projects and helping the athletic programs by creating practices fields in baseball, upgrades to the football main stadium and practice fields, building turf plots from sod, seed, sprigging, and plugging both warm and cool season grasses. Irrigation installation would be a part of these projects as well as using special clay and infield mixes that are of Major League Baseball standards.

Finally, students would be responsible for maintaining these facilities under the direction of Sr. Professor Jimmy Abernathy, Professor David Clanton, Mollie Townsend, the onsite instructor, Dan Montgomery and myself. There are sponsorship dollars that are available for supporting the program with special needs for materials and equipment. It is our hope that vendors within the turfgrass industry would also make contributions for additional resources to advance the program.

Overall, this would be a program that would give the students a career path in which they could become Sports Field Managers, Golf Course Superintendents, creating their own lawn or landscape companies, sod farmers, field construct contractors, or combinations of all. Classes would be taught year round, and Bunker Hill athletic fields, CVCC baseball facility, Hickory Crawdads Frans Stadium, and Hampton Heights Golf Club would be used as training facilities so that the students are exposed to fully operational sites to observe, work, and take part in the management of the facilities during the process.

One area on high school campus where turf plots will be placed.

The high school students will be renovating this softball field's infield.

Needless to say, it is our opportunity to increase the interest to all students in the Catawba County School District as well as other surrounding counties that we could put them on a path that could be a very promising career. Most students that have registered for the courses to date are those that have an athletic background, agricultural background, or those that are looking for options to expand their options for the future. CVCC is proceeding with this endeavor as a pilot program for more schools to become involved in these classes and career field. I will be director of the program and be able to demonstrate how things are done at all levels of play and the expectations that are required at all Major League Sports Levels. This is something that we want to grow and continue to be successful.

Labs have been planned for the course. One such project is to construct a half field for the high school baseball team so an extra area is provided so pitchers, catchers, and infielders that would be identical to a MLB spring training facility. The project would be operated with real world situations and the students would be assigned a specific role on the project such as sports field designer, project superintendent, sod producer, grading contractor, irrigation contractor, electrical contractor, and project manager. Construction meetings would be conducted and a realistic schedule would be composed and followed as well as construction specifications. This would apply for all labs that are conducted during the course duration.

Field trips would also be scheduled to professional athletic facilities, high profile golf courses, and sod farms so all participants get firsthand experience in all operations within the career field and different options the industry presents. We are blessed to have three facilities from all levels that are willing to allow this program to use as ongoing, fully operational sites for firsthand experience to all participants.

I personally would like for CVCC to produce more world-class turf managers throughout the world in all turfgrass careers, but sports turf seems to have attracted a lot of students with consistent interest. It is of the utmost importance that we continue to grow and expand our programs within high schools so they continue on to CVCC to complete their A.A.S. degree and enter into the career field as soon as possible. We feel that this program will give students unlimited potential and growth now and into the future. **/ST/**

Steve E. Peeler, CSFM, is Director of Horticulture and Turfgrass Management, CVCC Environmental Life Science.

Break through approach to human growth and development

"Standing on a Whale Fishing For Minnows"

// By PHIL EASON

When you witness the unbelievable play of Stephen Curry or Jordan Spieth or the amazing artistry of Misty Copeland or Lin-Manuel Miranda, you marvel at their talents. Few athletes or artists reach the pinnacle that professional athletes or artists do, but Spieth isn't composing musicals and Curry isn't attempting pirouettes. They excel because they have turned their unique talents into strengths. Now after over 40 years of human growth and development research, science has demonstrated that any person can reach the same level of excellence for everyday tasks, but first people must identify their talents.

Talents are a natural recurring pattern of feeling, thinking and behaving. A talent is merely potential; however, when an individual discovers his or her talents and invests in them that talent becomes a strength, a consistent pattern of near perfect performance in any given task.

Strengths are synonymous with results, but strengths must be developed from talents. Building your talents into real strengths requires coaching, practice and hard work, much like developing physical strength. People often think they know what they are good at, but are usually mistaken causing them to put effort and time into the wrong area and not achieving the hoped for results because they can only excel when they are working from a talent. Trying to excel at something one has little or no talent for is a frustrating and fruitless. Strengths-based development is about discovering your unique talents and then investing in them to create strengths.

Dr. Don Clifton, the father of Strengths Psychology, started this revolutionary approach to human growth and development by asking the question,

"What will happen when we think about what is right with people rather than fixating on what is wrong with them?" This simple question led to the strengths theory that maintains that if you develop your strengths to the maximum, the strength becomes so great it overwhelms the weakness. In basic terms growth and development best takes place when one focuses on identifying and developing strengths while managing the weaknesses. This theory is applicable to three different areas. First, it can guide one's personal and professional life impacting self-concept and self-confidence. Second, it is a strategic tool for decision making given that our decisions are made through our talent filters. What you see does not change, but what you do with what you see does when you name, claim, tame, and aim your talents. Third, it is a system for developing those around you in that people grow and develop best when they get to do what they do well naturally. Keep in mind there only two groups who like to do things over and over again that they are not good at and these two are the mentally ill and golfers and often they are one in the same. Obviously these two groups do not understand the breakthrough theory and revolutionary approach to strengths-based development.

Adopting a strength-based approach to growth and development is a breakthrough

in that it dispels the popular and accepted notion that people can excel at anything, if they try hard enough and have the right attitude. We have all heard this and have tried to heed it. The reality is that every person is one of a kind with a unique and powerful set of talents. We are not clones. While we can (and should) try anything we wish to, long-term success will elude us unless we have a basic talent for the endeavor. The elegance of taking a strengths-based approach to growth and development is that our greatest talents do more than make us unique individuals. They also serve as our greatest opportunities for excellence in that performance is the foundation of embracing a strengths-based approach. This is the case given that there are strong connections between who we are and what we do best and what people do best and how they feel. Ultimately how people feel impacts performance.

A strengths-based approach is groundbreaking in that the key to success is to fully understand how to apply your greatest talents and strengths in your everyday life; not to identify your weaknesses and then working to make them strengths. This conventional approach of fixing weaknesses is kin to trying to teach pigs to sing. All this does is waste your time and annoys the pig. Unfortunately, we offer singing lessons to pigs in all levels of education where students are expected to excel in all subjects rather than encouraged and allowed to fulfill the basic requirements and focus on their area of strengths. Businesses often take this same approach with their employees when it comes to growth and development and then wonder why employees are not engaged at work.

Individuals and leaders that excel in the future will break from the mindset of fixating on weaknesses in themselves and others and will focus on discovering their talents and invest in them to become strengths. This starts with knowing your top five talents by completing the Clifton StrengthsFinder, a tool that is key to starting the journey of focusing on your strengths and managing your weaknesses. The StrengthsFinder is the code that cracks open your awareness of your unique talents. It is your access to

Phil Eason

excellence. People who know their talents and invest in them are three times as likely to report having an excellent quality of life and are six times as likely to be engaged in their jobs.

Regardless the endeavor when you tap into the power and wisdom of this revolutionary approach of focusing on your strengths while managing your weakness you will be more efficient, act with more confidence, direction, and hope and will be more productive. There's nothing wrong with being aware of your weaknesses and managing them, but your greatest opportunity for success lies in building on your natural talents, not in fixing your weaknesses. The whale is within you, so stop casting for winnows and focus on your strengths. **/ST/**

Phil Eason is President of PLG Leadership, a consulting practice that uses a strength-based approach to growth and development of individuals, leaders, managers and teams. Phil can be reached at 270.799.1256, phil.eason@gmail.com *and followed on twitter at* @plg.

Book excerpt: Turf stories from American sports

// By RAFI KOHAN

Editor's note: This material is excerpted from **THE ARENA: Inside the Tailgating, Ticket-Scalping, Mascot-Racing, Dubiously Funded, and Possibly Haunted Monuments of American Sports.**

"THEY ALL COME DOWN TO GET GRASS FROM HILLBILLY WILLY," CACKLES PALUCH, WHO AT FIFTY-FIVE HAS WIND-MUSSED GRAY HAIR AND A WISP OF A MUSTACHE. HE IS ALTERNATELY BRAGGADOCIO AND WEIRDLY SECRETIVE AS WE DRIVE AROUND HIS PROPERTY.

As a modern-day fan, it's easy to take field conditions for granted. But groundskeepers weren't always invisible wizards behind a perfect playing surface. On the contrary, when the game of baseball was first forming in the mid-nineteenth century, taming the undulating earth of the American East Coast was top of mind, even if the idea of professionalizing the craft came as a bit of an afterthought. (It is only within the last twenty years or so that sports turf management has blossomed as an academic major at land grant universities.)

As Peter Morris writes in Level Playing Fields, early groundskeepers would tend to the turf as part of a bevy of responsibilities, including fire safety, crowd control, and janitorial work. It really wasn't possible to maintain perfect conditions, as teams were frequently evicted from their grounds and had to share homes with other sports and amusements, like ice skating rinks, polo matches, and horse racing tracks. Fields were so regularly chewed up and unpredictable that for many years baseball had a "bound rule," which stated that a hitter would be called out so long as a defensive player caught the ball before it hit the ground twice.

Provided minuscule budgets, early groundskeepers, who were typically seasonal employees, ran makeshift operations, spreading sawdust and igniting gasoline to dry the fields after rainstorms (drainage was a major issue) and constructing dikes with ingredients like rye bread and cheese. As for crews, groundskeepers would take what they could get: at Sportsman's Park in St. Louis, for example, a goat helped trim the grass, according to Michael Benson's Ballparks of North America.

Not everything was so primitive. In fact, a variety of features of modern ball fields owe a debt to groundskeeper ingenuity, such as the pitching mound, which began as a buildup of sawdust; the warning track, which replaced small hills before outfield walls that told defenders the end was near; and even basic terms like infield and outfield, which were adopted from Scottish farming and allowed for the section of the field farther from home plate to be less carefully manicured than the nearer section, per Morris. Though they weren't always effective, these crude attempts at lawn and order also helped establish the concept of home-field advantage. Baseball crowds were initially nonpartisan, but a team's familiarity with the eccentricities of its home turf provided an inherent edge, such as where to position fielders and how to avoid endemic obstacles like trees.

Before long, a more creative brand of groundskeeping emerged. The pioneers in this area, according to Morris, were two brothers, Tom and John Murphy. Like most early groundskeepers, each man was

a "rugged individualist," never staying with one team for too long, always storming off or patching up a feud. Despite their caustic personalities–and the occasional incident involving physical violence, such as when Tom allegedly assaulted longtime baseball man Connie Mack's brother with a bat, nearly killing the guy–the brothers' superior skills kept them in high demand.

Working for the Orioles in the 1890s, Tom Murphy tailored the field to his team's strengths, tilting the baselines inward so bunts wouldn't roll foul, and hardening the dirt around home plate so batters could slap the ball straight down for a sky-high bounce and then leg out a hit. (This became known as a "Baltimore chop.") Around the mound, Tom would scatter soap flakes to mess up the opposing pitcher's grip when he reached down to rub dirt on the ball. Meanwhile, in right field, the creative keeper designed a purposefully ragged and sloped patch of grass that featured a maze of "runways" that only the Baltimore defenders knew how to navigate. His contributions weren't limited to the field, either. Once an opposing player made an errant throw that rolled into the Orioles clubhouse through an open door, which Tom quickly shut and locked until the Orioles scored.

It was a swashbuckling period, when anything not specifically against the rules was considered fair game. It gave rise to a storied baseball tradition of stacking the deck in the home team's favor.

Bent Oak Farms

These days, big-league stadiums don't even grow their own grass. The Atlanta Braves, for example, get their turf from an outfit known as Bent Oak Farms in Foley, Alabama, not far from the Redneck Riviera along the Gulf of Mexico or my all-time favorite restaurant, Lambert's Cafe, "home of throwed rolls." Founded in 2007, Bent Oak burst onto the sporting scene and quickly became the go-to grower for major-league teams like the Braves, Marlins, and Astros, NFL teams like the Jaguars and Dolphins, and a host of big-time college football programs like the University of Georgia, the University of Alabama, and Auburn University. While you'll easily find Bent Oak in any discussion of top sports turf providers, you can't find it on a map.

"There's a reason for that. I ain't looking to be found," says Bent Oak owner Mark Paluch, who instructs me to meet him at a nearby Pick-n-Pay gas station, surrounded by nothing but flat grass pastures and a blinking red light. There I ditch my car and join Paluch in his pickup truck. "We're only about a mile from the Gulf of Mexico," he continues, pointing out the other sod farms (mostly landscape grass) and the soybean-, peanut-, corn-, and wheat-growing operations we pass on the way to his place. "This is the last piece of dirt between here and Mexico, and that body of water doesn't allow the air here to drop below freezing. I didn't pick this place by accident."

Paluch actually has two farms here, one growing Bermuda grass and the other growing paspalum. While both are warm-weather varietals, they would cross-contaminate and create an undesired hybrid if they grew too close together. Paluch takes me to the Bermuda farm, where a crew of workers is rolling up thick strips of sod, which are forty-two inches wide and between forty-five and fifty-five feet long, each one weighing around two thousand pounds. The sod is being shipped to the University of Georgia, in preparation for football season.

"They all come down to get grass from Hillbilly Willy," cackles Paluch, who at fifty-five has wind-mussed gray hair and a wisp of a mustache. He is alternately braggadocio and weirdly secretive as we drive around his property. One guy we come across, he tells that I'm a representative from MetLife Stadium – for what reason, I'm unclear. He also tells me not to take photos of certain machinery, which they have customized to their needs. One machine, in particular, I'm told not even to describe. "You don't need to write about that," he says. On second thought: "You can call it a gadget."

We drive past a shed that is filled with various other sod machines and draped with Super Bowl banners. (Unsurprisingly, Ed Mangan [of the Braves] relies on Paluch as a regular supplier for the big game. For the 2015 Super Bowl in Arizona, for instance, which is significantly farther away than any of Bent Oak's regular clients, Paluch shipped sod to Glendale in refrigerated trucks.) "I sleep out here,"

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Paluch says, explaining his dedication to the turf. "I don't chase pussy, dude. I don't have any hobbies, habits of any sort. You got to live this [life]." He points to the banners. "This is how I get off. Watching TV and your grass is on every channel? Oh yeah."

Paluch parks his truck. Before getting out, he spritzes himself with some sort of pink liquid from a Victoria's Secret bottle. "Alabama bug spray," he says, by way of explanation. "Works better than OFF or DEET, which you'd have to drink. Forty-five dollars a bottle and you smell like a lady, but most the guys down here are sissies anyway. Come on."

He wants to show me the grass.

Actually, not grass, Paluch clarifies, as we walk onto a patch of the stuff. "Value-enhanced athletic turf." Unlike most sports turf growers, Bent Oak grows sod only for stadiums. Paluch doesn't dabble in residential installations or even golf course grass. But what really sets his operation apart, he explains, is the manner in which he grows it: on sheets of plastic. "I'm not in the dirt business," he says. "I only grow grass on plastic."

Paluch lifts the corner of a strip of sod to reveal what looks like a black tarp or thick garbage bag underneath. The grass is literally grown on plastic. "You can take one percent of the grass and roll over three hundred percent," he says, emphasizing the strength of the sod, its ability to withstand the sharp movements of 350-pound linemen. "It's bulletproof. Boom. Now look at that piece of felt right there." I have never seen anything like it. The sod itself is about two inches thick, the bottom as flat as a piece of floor tile.

Paluch's bulletproof sod doesn't begin life in Alabama. Bent Oak is more like its finishing school. First Paluch grows his grass the traditional way–in the earth–at a farm in Georgia. After the better part of a year, he harvests that grass and ships it down to Foley, where it is laid down on plastic and fattened up for another year by raking in sand–because the sod is sand-based, it is less likely to come apart in the rain; or as Paluch puts it, "There is no mud in it." The care programs are customized so that each field has been treated with the same cocktail of fertilizers and fungicides being used at its stadium destination. Richard Wilt, a former groundskeeper for the Miami Dolphins and Marlins who now works at Bent Oak, explains how the plastic impacts the growing process. "Typically, grass grows down, right? The roots grow down. We don't grow down. We grow up. Once the roots hit the plastic, they turn back up, and it grows within itself." That is why the sod is so dense and heavy, he says. "The root-to-shoot ratio is twenty times more than any other grass. You can make a hammock out of it."

Another advantage to growing grass on plastic, Wilt says, is that there is zero stress on the sod when they ship it to a stadium. "When we cut and roll it up, you're not hurting the grass at all. All you're doing is rolling it up. Basically moving it. Other guys that sell grass, they harvest it. They cut it off dirt, and they're cutting half the plant off." Paluch nods, because now we are hitting on the heart of his business model. "It's carpet, dude," says Paluch. "It lays like carpet, and you can play on it in the morning. When you put it down, you can play on it immediately." Because the sod is so thick and heavy, it won't slide around, he says, not even under the stress of NFL game action. Why does this matter? "Because the money is in the concerts," Paluch says with a smirk. "Not ball fields."

He's right. Of the twenty-plus groundskeepers and turf industry insiders I interview for this chapter, each one identifies the increasing number of event days at stadiums as a growing issue for field directors, who have to maintain a surface that is both aesthetically perfect and safe to play on at all times. As Steve Wightman, the retired head groundskeeper for the San Diego Padres and Chargers, puts it, "You live and die with that field. It just tears you apart when they start putting all this stuff in there, and then they expect you to have that field the way it was before the event." **/ST/**

Is your maintenance program staying ahead of today's curveballs?

// By KEVIN MERCER, CSFM, CGM & LICM

Joel Simmons, president of EarthWorks, providing training and information about his products for the grounds crew on his product.

Albert Einstein said, "If the facts don't fit the theory, change the facts." In the past running and managing a sports field complex used to be planned and straightforward. Goals for profit margins were set and budgets were easily identified. Labor resources were used and customers went in one of two ways: happy or unhappy. You can only do so much with what you have in regards of labor, equipment and budgets.

The scenario today has changed considerably. The spokes in yesterday's business wheel only revolved around your operating budget that was put in place by senior administrators who prioritized budget controls, not the needs of the facility. With the demands for safer sports fields, it might be time to think about 5, 10 and 20-year plans for your facility. The quality of sports fields has enormously improved over the past 20 years; park and recs want safer fields for their children, colleges want quality fields for recruiting, and sports rental facilities want to be competitive with high profit margins. The question is, are you building a sports field to see if they will come, or are you are building a sports field to create an experience that the players will never forget?

Many maintenance facilities' departments are re-imagining their business model to stay current with customer services and trends, while also aiming to stay efficient with costs. There are six steps for re-imagining your department that could help guide you in your process. Denison University has developed a comprehensive approach on customer service and retaining customers; I will share it with you.

1. Killing the rumor mill. Before you start your business-reimagining plan, you must first eradicate the rumor mill. Rumors will always be a part of our lives in the work place. Killing them is a challenge, but stopping rumors has to be a priority. This will help you not only to be efficient, but also competitive. Here is the rumor mill's worst enemy: communication. For example, at times you may work on a project or a task, such as getting a field ready, which may have been set back due to a few neglected tasks. It's important that your crew sees you acknowledge the mistake, take credit for it and learn from it. They will appreciate and respect the honesty and maturity that this takes, which will in turn increase their likelihood to trust your word over that of the rumor mill. If you look at most problems, eight times out of ten they form from a lack of communication. No matter how the gossip starts, whether it is about projects, or the core values of the business or just the employee rumor mill, always put it to rest by communicating with your employees.

2. Mission statement, core values. To offer exceptional customer service you have to have your team and upper management on the same page. To effectively do this, start with any mission statements for your facility or department. Here are some questions to guide you:

- What is my risk tolerance?
- What is my access to capital?
- Who do I need to help me get there?
- Do I have everything I need to make this journey?
- What is it I am striving for?
- Where do you start?
- How can I get my team and upper managers to agree on the level of service goals you want without budget constraints, issues in staffing or roadblocks?

3. Points of success. This third step has helped me to keep my focus on main goals and not the distractions. The question is not "if you build it, will they will come?" but rather, "if you build it, would they stay?" Your mission statement is a short statement of your sports turf maintenance practices and purposes. It should reflect and identify the scope of your operations. It should let the community know what kinds of services your organization provides for your local sports teams (the customers) and its geographical region of operation.

What are the core values of our grounds maintenance operation? Make no mistake, values cost something, but at what price and for what purpose? Simply put, it is all about the inputs vs. outputs. The core values of your business should be based on seeing the good in your employees and developing these qualities from in house training and professional development with individualized sports maintenance tasks. Remember, everyone is great at something, but perhaps not everything.

It is important to recognize that writing down your core values and hanging them in your office or breakroom does not actually do

Another part of bringing your facility to the next level for quality and service is having your venders understanding your short and long term goals. Here is the author, left, with Gary Wilber, Oakwood Sod Farm.

Denison University, Granville, OH.

anything. The values and support from your team must be put into action in all facets of your sports turf maintenance operations; from hiring new staff members to the day-to-day work. Above all else is the focus on the customer's experience from the first impression of your complex and the quality of service. Remember if you treat your customers as you would treat your friends, the more valuable you become.

4. Inputs & outputs. What fundamentals are required to have your sports field produce the experience of a lifetime? The inputs and outputs consist of nothing more than planning, executing and always trying to raise the level of service without increasing the budget and labor expenses. Labor is vital to small business survival, and having key turf managers in a productive position during a catastrophe is imperative.

Today, organizations need a coach, not a director. Training full or part time employees and summer help on equipment and the fundamentals of the job is only a fraction of it. Managing is nothing more than controlling the outcome with direction. Coaching, on the other hand, is helping others to improve, develop and learn new skill sets. It is also equated to mentoring and challenging the employees and interns to move beyond their comfort zone and to create a safe learning environment for taking risks.

Once you have successfully built up this basis, there is then room for you to fine-tune the extra details to any level you want; that is until it starts costing you extra labor hours. Once your crew is cross-trained to every function of the operation, you can then have them train volunteers. Use your local STMA chapter to help locate folks through networking like, PTA, garden clubs, students, parents etc. Once your volunteers are trained and a system is in place, showcase your volunteer operations and premiere your field on social media. Bring as much attention as you can to your operation and its positive qualities. Once you have put your field in a positive light, you have increased outreach and the possibility of receiving outside funding.

Financing is a necessary input. However, you must be prepared for all situations, including catastrophic weather events that may drain the funds from your operating budget. When storms, droughts, or severe snowstorms occur, a developed business continuity plan will help offset some of the upfront expenditures. With the right insurance umbrella protection and with the use of the Federal Emergency Management Agency (FEMA) you can keep your funding safe from the impacts of catastrophic weather events that will require funding towards overtime, rented equipment and contractual expenses to makeup for its damages.

The argument that could be made to your financial manager is to step up your department quality of service and labor efficiency from better products and equipment. This may mean identifying and budgeting for third-party contractual services that can take on some of your demand for a limited time, or identifying alternate distribution channels to keep your fields and services running smoothly.

Although succession planning is not technically viewed as an output from senior management, this mind set could not be further from the truth. Succession planning is often the subject of any sports field complex. Think about it this way, what will happen to the organization as a whole if the sports turf manager was out of work from health issues. The assistant sports turf manger or supervisor would have to step up. The STMA conferences provide in house training and professional education that will develop the necessary skillsets for your assistant sports turf manager or supervisor to run the day-to-day operations.

5. Social media. Social media is a great platform to highlight your company mission statement and goals to your customer, but this can be tricky to execute right. Every department including food, sales, volunteers and your grounds maintenance team should have postings to rollout and execute your new reimagining process throughout the year on your company social media page. Human resources and the marketing department are both great sources to utilize this process efficiently.

6. Does it flow? The last step of reimaging your sports field complex is the wrap-up process. Do all the steps that the committee established create a consistent and reasonable experience? Does it also align with the goals and innovative ideas that your organization wants to provide to your customers? When undergoing this process, you must ratify all of the previous steps mentioned.

Acknowledgements: Dr. Chris Reber, President, The Community College of Beaver County; Dr. Adam Weinberg, President, Denison University, and David English, Vice President for Finance & Management, Denison University. **/ST/**

Kevin Mercer CSFM, CGM & LICM is Grounds and Landscape Manager at Denison University, Granville, OH.

How do new turf industry products come to be? Part II

// By ERIC SCHRODER

Eric Schroder checking with Noah Wahl, center, and Rex Bergsten, right, to see if they have insured the Project Delta prototype before Schroder took a test drive.

Last summer I was invited to The Toro Company's headquarters outside Minneapolis to take part in their annual Sports Fields & Grounds Forum. While there I met some of the principals involved in developing a new product, "the Outcross 9060," and toured the company's research and development facilities. In my role as editor I've toured a few manufacturing plants over the years. Seeing first-hand how mowers, utility vehicles and other equipment used by sports turf managers are built makes for an interesting day. But the inside look from those who figure out the whys and hows of engineering, not only for a new piece of equipment but for an entirely new product category, was truly intriguing.

Toro was founded more than 100 years ago to provide engines for an early tractor manufacturer, called The Bull Tractor Company, an association that began the name "Toro." Later the company shifted its focus to the mowing industry after a golf club asked it to create a motorized fairway mower (the members were probably tired of playing out of horse hoof divots). That first machine featured five reel mowers mounted onto the front of a farm tractor.

Toro engineers have been cultivating new products ever since, including some with great names: a fairway sprinkler system in 1925 (the "Sea Serpent"); the first push reel mower in 1928 (the "Silver Flash"); and a stand-on mower in 2008 (the "GrandStand"). During my visit, picking the winning name for the machine seemed to be one of the most perplexing of all details being juggled by Noah Wahl, Product Marketing Manager. In the end, Outcross was selected because of its fitting definition: to cross by breeding characteristics of different strains for the purpose of removing unwanted traits or introducing desired traits.

Designing a new product

I asked Wahl what has to happen before getting a green light to begin developing a new product. "Key aspects to uncovering the value of a new product center around the customer, in listening to and observing their needs. Engineers, marketers, and sales all ask questions to find those aspects that are causing the customers' issues. Recognizing the customer needs, rationalizing the value of fulfilling that need, understanding the gaps or risks in the technology required to meet that need, and determining the practicality of building the product, are the initial steps of the concept and feasibility stages," he said.

"Once those key aspects are found, our development teams start to conceptualize a product that customers will value by allowing them to perform their jobs and tasks more efficiently and at a higher quality," Wahl said. "It is then up to the project team to build the business case that will give the project the green light."

What's the next step?

"At this point, we build our first prototypes and start to put them through rigorous lab and real-world testing. Components are put through millions of cycles in worst-case scenarios to ensure they meet our specifications. Nothing moves forward unless we are sure it will fulfill our customer's needs and meet their performance expectations," Wahl said.

Rex Bergsten, Chief Development Engineer, led my tour of the R&D department. Bergsten patiently explained what the goals are in each area of the department as we walked through the maze of stations and testing rooms. I commented more than once about how much money it must cost, especially given not only the "knowledge capture" required to engineer and develop a new machine, but also the investment in technology and hardware of the equipment that enables Toro's staff to conduct tests and create models. Rex was too modest to quote actual numbers but even an all-thumbs novice like me knows the company has invested tens of millions of dollars in their R&D labs to ensure the highest product quality.

I asked Bergsten at what point are customers involved in the development process. "For a successful product development program, it is critical to have the customer involved throughout

A Toro machine working in a stadium in the 1940s.

Advertisement for The General. 1942.

the entire process. At Toro, our process involves the customer early and often. Customer feedback and suggestions are the impetus for most projects. We get an idea, put something together, and immediately get it in front of customers. After we receive feedback, we go back to the drawing board to make the product better. Then it goes in front of customers again. This cycle continues throughout the development process until we meet all the customers' expectations and needs," Bergsten said.

"After a product goes to market, we go back to the customer to verify their needs are being met," he said. "During this process it is quite common to uncover needs that are unrelated to a product currently being developed. For example, while working on the Outcross, several other potential new products or significant improvements to other existing products were being formulated."

I asked, "What is the toughest part of the development process? Or does that differ with each new product?"

"Toro has a long history of turf-focused products. Product development is applying that turf product knowledge to an entirely new category of product for the industry that will help turf managers accomplish so much with one product. The customers who have supplied feedback through the development process have been key to challenging our engineers and marketing teams to think outside the box," Bergsten said.

Wahl responded, "The toughest part of any project is in sweating the details, including taking the time to understand what the customer really is needing, developing a test plan to ensure the product meets those needs, creating a manufacturing process that provides the consistent product quality customers expect from Toro, and having trained support after the sale to provide many years of satisfied use by the customer."

One piece of technology that has made product development easier is the 3D printer. "It's imperative that all parts function as designed but the look and feel of a component is also very important." Bergsten said. "We use the 3D printer to quickly test the fit, function and feel of a part before we go into production."

Test drive

Wahl said the idea behind the Outcross had been floating around Toro for years; that is, a machine that could deliver the power of a tractor, perform multiple tasks, drive like a utility vehicle, operate simply, and do it all on fine turf without damaging the grass. Of course the last item might be as important as any to sports turf managers; Bergsten said this is because the machine distributes its weight evenly and features four-wheel steering (it's 4-wheel drive too).

"If there are jobs around the sports field that you do now with a tractor or utility vehicle, you can likely do them more efficiently and with reduced risk of turf damage with this machine," Wahl said.

Wahl and Bergsten had me aerating the grounds of Toro's headquarters in just a few minutes (I told you it was simple). Operating the machine was very similar to driving a car and the aerator was controlled with one paddle near the steering wheel. This is possible thanks to pre-set attachment parameters (set one time, by you) that take the decision making away from the operator and give it back the turf manager. Wahl said this should enable less-experienced crewmembers to safely and consistently complete tasks with which they might not have been previously trusted.

Over the years I've learned that product development is a long, expensive, and painstaking process that when done correctly results in products that make your job easier. When a company like Toro asks you for feedback or for you to come visit, jump at the opportunity. Your input will likely play a part in the next product you use on your turf. **/ST/**

STMA COMMERCIAL MEMBER SPOTLIGHT:

David Taylor, STEC Equipment

Editor's note: Another installment in our continuing series highlighting STMA commercial members. This month we hear from David Taylor, owner and president, STEC Equipment, Sandy Spring, SC:

SportsTurf: How do you develop relationships with turf managers?
Taylor: Over the years we have learned to listen and try and understand the problems that turf managers face. Also because we stand behind what we do and say we have been able to earn the trust of many. Delivering what we promise helps build any relationship, not just with turf managers.

ST: Do you have any recommendations for customers on how to get the most out of their supplier relationships?
Taylor: Open communication is the key any relationship. If there is a problems/ issue its best to discuss it before it escalates. Machines break, problems arise but being able to know the full picture helps speed up the recovery time. Being open minded about new concepts and doing things differently as well as trusting your supplier are key to a good relationship.

ST: How are you able to service the specialized equipment you sell?
Taylor: Without sounding arrogant, we sell the best products on the market in our industry. We do not have many major breakdowns; most issues are alleviated by routine maintenance. If there are major issues we have a team of technical support and field service technicians on hand to repair on site. Alternatively with our extensive logistics department we are able to expedite transportation whether it is overnight airfreight or overnight delivery for parts and machines. In fact our new location is a half-mile from the area's main UPS hub.

David Taylor, STEC Equipment

ST: With more and more fraze mowing going on, is that machinery now selling itself? Or is that work being done more on a contracted basis?
Taylor: With the rising awareness of the benefits or fraze mowing we see openness to trying something new, mostly in the sports turf industry. Since we entered the market of fraze mowing more than 10 years ago we have seen a steady increase of users, end users as well as contract users. More high-end clubs and facilities own their machines as well as bringing in contractors. With the speed and efficiency of the machines today fraze mowing still is predominately is a contractor's machine.

ST: How do you decide what products to import from Europe? Are there any new machines that will soon be available?
Taylor: : We listen to market trends as well as search for new innovations worldwide. Going back to open communication, we listen to our customers and look to provide them with products that will meet their needs. We are also closely involved with design and development of new equipment and have several new products in testing for next year, some of which we hope to launch at the STMA Conference in Texas.

ST: Are there any new markets that you are entering?
Taylor: Sports turf is our number one priority industry with most of our focus in this area. We currently work predominantly in sports turf, golf and turf production but are expanding with airports as well as some equine products. We hope to stay true to our name STEC, Specialized Turf Equipment Company, and we hope to focus on our motto, Quality, Innovation, Delivered. **/ST/**

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PRODUCTS YOU'LL SEE AT STMA SHOW

DOUBLE PLAY INFIELD CONDITIONER

Diamond Pro first introduced **Double Play** Infield Conditioner back in 2012, at the All Star game in Kansas City. Beautiful Kauffman Stadium is home to the Kansas City Royals and head groundskeeper, Trevor Vance. Since then, Double Play Infield Conditioner, the first and finest blended product on the market, has been a popular choice of groundskeepers across the country. It's an ideal blend of our Vitrified Red Infield Conditioner and Professional Calcined Clay Conditioner, together in ONE bag. Try a bag, and you too will be hooked! Available in 50lb bags, 40 bags per pallet, from your local friendly Diamond Pro distributor.

Diamond Pro

INFINICUT MOWER FROM CUB CADET

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

made the switch and learn more at www.cubcadetturf.com/infinicut.

Cub Cadet Turf

WORLD CLASS REMOVABLE READY TO USE ARTIFICIAL TURF PAINT

Simply the best solution for your temporary artificial turf paint needs, World Class Removable Ready to Use Artificial Turf Paint is available in all colors for your projects. Our paint is exactly what artificial turf users are looking for: it goes on easily and looks spectacular, holds up amazingly under the stress of events, and removes like it has never been on the turf in the first place. With a development phase of almost 3 years and additional testing of a year, this is the best, brightest, and easiest to use removable artificial turf paint on the market.

World Class Athletic Surfaces

GRIGG SEVEN IRON 7-7-7 GRANULAR FERTILIZER

GRIGG Seven Iron 7-7-7 is a granular multi-purpose plant food, starter fertilizer, pre-plant, and soil conditioning fertilizer. It is a key product in GRIGG's sports turf nutrition program and is designed for use in any season to increase turf vigor, overall quality, color, wear tolerance, and provide quick establishment. Seven Iron contains 7% iron in both quick and slow release forms, and is formulated to correct nutrient depleted soils and produce long lasting dark green turf. It is an excellent option for turf grass recovery from environmental stress and mechanical damage and will help increase the rate of turf establishment. Seven Iron is part of GRIGG's GreenSpec granular nutrient line, which provides pure, homogeneous nutrition.

Grigg Brothers

JACOBSEN TURF EQUIPMENT

Jacobsen offers high-quality turf equipment solutions to the landscaping industry through our commitment to delivering machines that match the power and performance you need to complete turf maintenance tasks with ease. For more than 95 years, Jacobsen has been providing industry-leading turf equipment and is driven to help customers consistently and cost-

effectively manage perfectly manicured, healthy turf. Jacobsen offers a wide variety of equipment including zero-turn mowers, rotary mowers, reel mowers, aerators, sprayers, and more that can assist you in keeping your turf looking its best. Jacobsen mowers can assist you in covering higher amounts of acreage in less time to increase efficiency and cut down on your mow time without sacrificing performance.

Jacobsen

MINI TURFROLLER

The mini turfroller is a 3-point hitch version of g2 turftools turfroller with rounded edges that also incorporates g2 turftools patented turfslicer. With the turfslicer attachment, the mini turfroller makes planting sprigs, setting seed, and top dressing more efficient. The unique slicing action of the turfslicer blades also penetrates the thatch area to provide much needed air space while replanting existing stolons to promote a healthier, thicker turf. The turfslicer is fully adjustable to a depth of 1.5" for maximum slicing of turf, sprigs, or seed. When not using the turfslicer, the turfroller can be used to smooth existing turf surfaces with the maneuverability of a 3-point hitch attachment.

g2turftools

SMITHCO SAND STAR INFIELD GROOMERS

Safe playing surfaces have become a top priority of Grounds Managers, Coaches and Park Managers. It's a top priority at Smithco,

too. Our new Groomers help make infields, base paths and warning tracks consistently smooth and level while providing surfaces with enough give to help prevent injuries from falls, slides or bad hops. A scarifier that's center mounted makes a big difference; it's where most of the machine's weight is available to dig into hard surfaces to create a smoother finish. Rear mounted scarifiers can't do that. Five models in 2- 3-wheel drive, 16 or 18-hp gas engines; 18-hp diesel engine, hydraulic or mechanical steering; "Star Trak" drive system on 3-wheel drive models for improved traction and increased transport speed; hydraulic control of implements with unmatched ground clearance. Widest range of implements for grooming, rolling, aeration, renovation, construction, debris and core removal, topdressing and fertilizer applications and standing water management.

Smithco

HANDLE WET MATERIAL WELL

The Rink DS 3800 Disc Spreader from Redexim North America is a topdresser with dual spinners and a variable spread pattern of up to 50 feet wide. The hopper will hold an industry-leading 5 cubic yards. The operation of the belt and spinners can be done from the tractor seat by switching the hydraulic lever. No unnecessary drop of material takes place between stopping and operation, since the material release gate

automatically closes when the belt is stopped. The spinner discs have been designed in a way that they will handle wet material extremely well.
Redexim North America

SOL-AER WINTER TURF BLANKET

Made with a non-woven material, featuring a polypropylene core sheathed in polyethylene for superior strength/durability. This allows its seams to be fusion welded, not sewn like others, so panels can be moved and walked on without damage, and hand cut without fraying. Light, water and air can penetrate, but insects cannot burrow through. Provides superior day/night insulation and frost protection. Promotes earlier, more rapid germination and green-up. Standard model topped with same proven, heat-absorbing silver lace coating as competitive Radiant product. Also available without coating for economy and with full Vipol wrapped edging with #4 grommets installed every 2½ feet all around. Standard and custom sizes available. Sold by the best sports turf dealers. SOL-Aer Turf Blankets are the best-ever winter turf protectors.
Aer-Flo

AIR2G2

The Air2G2 Soil C.P.R.™machine uses air injection technology to perform "Soil C.P.R." – a process that addresses Compaction, Porosity, and Respiration by fracturing hardpan layers and enabling airflow, without surface disruption. The Air2G2 uses three probes to laterally inject pressurized air up to 12-inches beneath the surface of the soil, comprehensively fracturing the compacted layers that form as a result of foot traffic, mechanical traffic, and nature's daily wear and tear. These laterally injected air blasts loosen up compacted soil immediately, but without any disruption to the surface of the turf. The Air2G2 Soil C.P.R. machine is designed to keep your turf breathing day after day, promoting gas exchange, better root growth, and rapid drainage.
Air2G2.com

MACLEOD COVER BY COVERMASTER

Rain or shine, the game must go on and so must the field preparation that happens before each game. At the StubHub Center in Carson, California, getting the field ready for Sunday Los Angeles Chargers football after a Saturday LA Galaxy soccer game is a must, despite the weather forecast. That's why it made sense for the stadium to invest in a MacLeod Cover from Covermaster, a semi-automated inflatable sports dome that shields the field with a lightweight, semi-translucent protective cover. Eighteen feet high at its tallest point and tapering to a few feet high along the sidelines, the inflatable football field cover allows the grounds crew to cut grass, paint field markings and do minor repairs between games, even in a downpour.
Covermaster

SYNGENTA HELPS SPORTS TURF CONDITION. PERFORM. RECOVER.

Like successful athletes, turf must be conditioned to perform at its best and recover quickly from stress. Syngenta offers products like Acelepryn insecticide, Tenacity herbicide, Primo Maxx plant growth regulator as well as Velista, Heritage Action and Daconil Action fungicides to help turf become fit before the season, provide exceptional turf quality for players, and recover from stress. As you continue to see increased stress from insects, disease, heat, drought, aerification and traffic, choose the right products to keep your turf quality high and your players satisfied.
Syngenta

PIN-ON COUPLER FOR TURF PUSHERS

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

JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL

ANSWERS FROM PAGE 17

This photo dates back to January 2017 when I visited Miami's Marlins Park. The Director of Grounds was giving me a tour of the field a couple weeks after the stadium had hosted the third annual "Miami Beach Bowl." For the event they had converted the MLB paspalum baseball field into a football field. While looking over the field I noticed this brown area just off the warning track and I asked what it was. As it turned out, in preparation for the football game, the mound was removed and the mound area, the baselines and warning track were covered with 419 bermudagrass because it was less expensive sod as compared to the seashore paspalum, and it was temporary. After the bowl game and since there were no events right after the holidays, some of the crew took some much-needed time off. During that time the retractable roof was allowed to remain open due to nice weather and to give the turf some much needed air and sunshine. Also, during this same period of time, a contractor for the stadium

was responsible for removing the black temporary seat covers that were in place for the bowl game. He apparently removed them from the seats and stacked them up neatly on the temporary sodded area of the field, which was also in the direct sun for most of the day, effectively killing the newly laid sod with heat. When the Director of Grounds, saw this brown area, it took some investigative work to figure out what happened; however one of the crew finally figured it out since the size of the brown area matched the size of the covers.

Thanks to Chad Mulholland, Director of Grounds at Miami's Marlins Park in Miami, for allowing me to take this photograph.

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.

WHAT DOES "BUSINESS CASUAL" ATTIRE MEAN?

// By ALISON DOYLE

Business casual sounds like a breeze – no more worries about what to wear to work, right? Not quite.

In fact, this dress code guideline is a frequent source of confusion for workers. And it's not their fault; there really isn't a clear, standardized definition. Business casual may mean different things at different companies, cities, and industries. And on top of that, understanding the subtle differences between "business" and "business casual" isn't easy.

One thing is clear: Dressing in shorts and a t-shirt or a sundress and sandals is too casual. But wearing a full suit, and a tie, if you're a man, is too formal. When in doubt, it's better to err on the side of dressing too formally, rather than too casually. But where's the line?

Read on for guidelines that will help define appropriate business casual attire for men and women, along with general advice on what to wear, and what not to wear, in the office and during job interviews.

Basics

Women. Women should wear a combination of a skirt or dress slacks, blouse, sweater, twinset, jacket (optional), and hosiery (optional) with closed toe shoes. Sandals or peep-toe shoes may be permissible in some offices; flip-flops are never considered part of business casual.

- Khaki, corduroy, twill, or cotton pants or skirts (skirts should not short)
- Sweaters, twinsets, cardigans, polo/knit shirts
- A sheath dress is often flattering, and looks very professional
- Solid colors work better than bright patterns

Men. For men, appropriate business casual attire is dress slacks or chinos, a shirt with or without a tie, dark socks, and dress shoes. Avoid wearing polo shirts to an interview, even if they are acceptable for the job in question.

Do not wear jeans or shorts.

- Khaki, gabardine, wool, or cotton pants, neatly pressed
- Cotton long-sleeved button-down shirts, pressed
- Sweaters
- Leather shoes and belt
- Tie optional

Additional dress code rules

Look Before You Leap. If you›re new to the company, avoid dressing like you're heading to a picnic until you understand the company standard. Err on the side of being conservative rather than showing up underdressed until you check with HR or a colleague to determine what exactly business casual means for your company.

During job interviews, always opt for the more formal version of business casual. Even if you show up and your interviewer is clad in shorts or a short skirt, that doesn't mean it would be appropriate for you to dress that way. During a job interview, you want to make a good impression, and part of that is dressing professionally. There are some outfits you shouldn't wear to a job interview, regardless of the dress code.

Right Wrong

Maintain Consistency. If you wear professional and conservative outfits Monday through Thursday, don't show up Friday looking unrecognizable. That's true even if your office has "casual Fridays." On casual Fridays, you can dress down a bit. It's often acceptable, for instance, to wear jeans.

But opt for your best jeans, not ones with stains or rips on the cuffs. Whatever you wear on casual Fridays should still be acceptable for a meeting with your boss or a client.

No matter what kind of company you work for, maintaining a consistent image helps to establish trust and credibility with you as an employee.

Consider Your Calendar. If you're meeting with clients or scheduling a business lunch, dress on the conservative side out of to respect the people you're meeting with; save the casual comfort for a time when you'll be in the office all day.

When there's no dress code

What do you wear when there's no dress code at all, and almost anything goes? How casual is too casual? Here are tips for both men and women for what to wear to work and job interviews when there's no dress code at all.

What Not to Wear. When the dress code is business casual, it's not appropriate to wear your favorite old t-shirt, ripped jeans, ratty sneakers, or flip-flops. Remember the "business" part of business casual, and leave your old comfortable clothes at home; outfits should still be clean, pressed, and fit properly.

Avoid clothing with logos or potentially offensive words or graphics. Men do not have the option to skip shaving or go without a belt. Women should not wear anything that's too tight, flowing, short, or low cut. Make sure that bra straps aren't visible. And it's a good idea to keep makeup natural and low-key.

Alison Doyle is a job search expert, The Balance.

2017 STMA Field of the Year winners

Since 1992, STMA presents the industry's highest honors to members who manage baseball, football, soccer, softball and other sporting playing surfaces at the professional, collegiate, schools (K-12), and parks and recreation level. The 2017 winners are:

Professional:

Parkview Field at Ft. Wayne Tincaps, Ft Wayne, IN
Keith Winter, Head Groundskeeper (Baseball)
Moneygram Soccer Park Field 8 at FC Dallas, Frisco, TX
Troy Crawford, Director of Grounds (Soccer)

College and University:

Cleveland S. Harley Baseball Park at University of South Carolina Upstate, Spartanburg, SC
Travis Dill, Sports Turf Technician (Baseball)
Historic Grant Field at Georgia Tech University, Atlanta, GA
Chris May, Director of Athletic Grounds (Football)
Osborne Stadium at Liberty University, Lynchburg, VA
Brian Hinkley, CSFM, Athletic Field Manager (Soccer)
Patricia Wilson Field at Stetson University, DeLand, FL
Steve Barnard, Field Maintenance Technician (Softball)
5/3 Bank Stadium at Kennesaw State, Kennesaw, GA
Shane Hohlbein, CSFM, Sports Turf Manager (Sporting Grounds)

Schools and Parks:

McLean County PONY Baseball, Bloomington, IL
Andy Ommen, Head Groundskeeper (Baseball)
Cowboys Field at Jim Warren Park, Franklin, TN
John Wagnon, Athletic Crew Chief (Football)
Longfellow Park at Park District of Oak Park, Oak Park, IL
Travis Stephen, Sports Field Manager (Soccer)
Blue Eagle Softball Complex at Clover School District, Clover, SC
Will Rogers, CSFM, Sports Turf Manager (Softball).
Pleasantview Championship Field at City of Boulder, Boulder, CO
John Cogdill, Manager (Sporting Grounds)

Rogers has now received this prestigious honor four times (2014, 2015, 2016), each in a different sporting category. Three-time winners include Hohlbein (2015, 2016) and Cogdill (2014, 2015). "Field of the Year" award winners for the second time include Barnard (2011) and May (2014).

A panel of 13 judges independently scores entries based on playability, appearance of surfaces, utilization of innovative solutions, effective use of budget and implementation of a comprehensive agronomic program. Judges may not award a field in each category. Winning fields will be featured in a 2018 issue of this magazine.

Awards will be presented at the annual awards ceremony held during the 29th annual STMA Conference and Exhibition in Fort Worth, TX, which is January 16-19, 2018. Winners also receive complimentary conference registration, three nights' hotel accommodations and signature clothing.

STMA's candidates for the 2018 Board of Directors

Each year, the STMA Nominating Committee develops a slate of candidates for election to the Board of Directors and presents them to the membership via an electronic ballot in late November.

The board includes 13 members: five Officers and eight Directors. Four of the Officers are slated unopposed; the Secretary/Treasurer has two candidates. Up for election are four Director positions: Academic, Parks and Rec, Higher Education, and Director-at-Large.

Three Director positions are vacant and will be filled by (incoming) President Sarah Martin, CSFM, per the STMA Bylaws. The Schools K-12 Director position, which is held by Sun Roesslein, CSFM, is not up for election this year.

Officers (unopposed)

Immediate Past President: Tim VanLoo, CSFM, Iowa State University, Ames, IA
President: Sarah Martin, CSFM, City of Phoenix, Phoenix, AZ
President-Elect: Jody Gill, CSFM, Blue Valley School District, Overland Park, KS
Commercial VP: Boyd Montgomery, CSFM, CSE, The Toro Company, Bloomington, MN

Secretary/Treasurer

Weston Appelfeller, CSFM, Columbus Crew SC, Columbus, OH, OR Jimmy Simpson, CSFM, Town of Cary, Cary, NC

Directors

Academic: Jason Kruse, PhD, University of Florida, Gainesville, FL, OR Brian Scott, Mt. San Antonio College, Walnut, CA
Director Parks & Rec: James Bergdoll, CSFM, City of Chattanooga, TN, OR Nick Caggiano, City of Nashua, NH
Director Higher Education: Joshua Koss, CSFM, San Diego State University, San Diego, CA, OR Nick McKenna, CSFM, Texas A&M Athletics, College Station, TX
At-Large Elected: Matt Anderson, CSFM, University of Arizona, Tucson, AZ, OR Rusty Walker, CSFM, City of Grapevine, TX

For an overview of the slating and election processes and the candidates' bios and vision statements, go to *STMA.org*.

FIELD OF THE Year

FIELD

INFINITY PARK

LOCATION

GLENDALE, CO

- **Category of Submission:** Professional Sporting Grounds
- **Sports Turf Manager:** (formerly) Noel Harryman
- **Public Works staff (when available):** Josh Bertrand, Gene Hazlett, Kevin Brown, Jody Yonke, Chris Roozing, Patrick Bellich, Noah Windschitl, & Eric Farrell
- **Original construction:** 2007
- **Recent renovations:** A heat system was added to a portion of the field and drainage along the south side of the field was added and tied into existing sub drainage system. The heat system was added to help alleviate safety issues in one particular area that is usually completely frozen when the season and practices begin.
- **Rootzone:** 92% Sand 8%, other mix: 4% silt, 2% clay, 2% organic matter
- **Turfgrass variety:** Midnight, Awesome, Impact, Nu-Destiny Kentucky bluegrass (70%); Caddieshack, Accent, RPR ryegrass (30%)
- **Overseed:** Overseeding is done with Kentucky bluegrass. The pitch is overseeded four times a year (last week of March, first week of May, middle of June, and the first week of September). The first three overseedings were done with 7#/1000 sq.ft. and the last overseeding was done with 10#/1000sqft. The seed mix this year was modified because a couple of the varieties were getting harder to obtain. The new mix this year has been Midnight, Noble, Hampton, and New Destiny. For divot mix repair we use a 1:3:1 ratio pregerminated seed, USGA sand, and a mild fertilizer like Milorganite.
- **Drainage:** GraviTURF designed by Dan Almond of Millennium Sports. Using 4" ADS drainage pipe, located on 15' centers, set in pea gravel, 10" below surface.

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.

Editor's note: We thank Josh Bertrand, City of Glendale, for helping us for once hearing from the crew of a Field of the Year winner rather than the head sports turf manager.

Josh Bertrand says, "The City of Glendale takes tremendous pride in the maintenance of Infinity Park. This pride is reflected in the STMA Field of the Year award, which was submitted by Noel Harryman. Noel was the sports turf manager with support from the Public Works Department. Noel had been with the department for 7 years, and left the City of Glendale earlier this year to take a position with Jefferson County Public Schools in Colorado.

"As a small Public Works Department of 13 employees, it is not uncommon for employees to seek employment at larger organizations where they may find more opportunities for career growth. Thus, the Public Works Department has procedures and processes in place to ensure smooth transitions when an employee leaves.

"One of the unique aspects of turf management at Infinity Park is the work is supported by the Public Works Department," Bertrand says. "Every member of the Public Works team is cross-trained to include training in turf maintenance. Cross-training employees creates a safety net with regards to the care of the playing surface. This cross-training means employees with job titles such as 'Information System Coordinator,' 'Utility Worker/ Master Electrician' or 'Maintenance Worker' were tasked with aiding the turf manager with performing or assisting with all the maintenances tasks, from painting the playing surface for a game to aeration and topdressing. It also means that turf maintenance personnel are cross training in other disciplines in Public Works such Fire Hydrant maintenance and snow removal. This creates a culture of learning and growth for the employees. It also creates knowledgeable and talented employees, who are in demand or seek to use their new talents elsewhere. In the spirit of crossing training, some of the employees who maintain Infinity Park responded to *SportsTurf*'s questions."

What motivates you every day to do your best work?

"My children." *Lance Barber, Maintenance Worker I*

"I have worked here for 30 years. This job motivates me, doing different tasks every week to improve the City's appearance." *Jody Yonke, Operations Supervisor*

"Respect with my work, knowing the people in the City of Glendale would see my work. Getting notice with my co-worker and supervisor." *Anthony Borja, Maintenance Worker I*

"What motivates me every day to do my best work is knowing that every day of work that passes by, I'm one step closer to achieving my goals and to be successful in life as well as happy!" *Adam Niemczyk, Utility Worker/Mechanic*

"The short answer would be success. If we try our best to accomplish a goal and we do so then we will have success. If we

try our best and fail then we also may achieve success by learning and gaining knowledge from the experience. So we will always be successful as long as we try to do our best." *Chris Roozing, Utility Worker/Master Electrician.*

"To provide a safe playing field to limit injuries. Accomplish goals." *Patrick Bellich, Utility Worker/Inspector*

"I try to push myself to be the best and do the best that I can everyday while learning and striving towards success." *Travis Jacobson, Maintenance Worker I*

"To create a safe playing surface." *Noah Windschitl, Maintenance Worker II*

What traits in a boss do you most appreciate?

"Hard working, easy to work with, willing to help, provides cross training." *Jody Yonke*

"Getting recognized for hard work and listening to your ideas." *Noah Windschitl*

"We can appreciate a boss who can lead by example, who can admit to their own mistakes, show appreciation, recognize and encourage improvement, acknowledge their own shortcomings before criticizing, and encourage employees to try different solutions to problems." *Chris Roozing*

"Understanding, respectful, good communication." *Patrick Bellich*

"His ability to teach, train and lead the team to success." *Travis Jacobson*

"Traits in my boss and supervisors that I most appreciate are: hardworking, honest, not afraid to break a sweat with you, and knowledgeable." *Adam Niemczyk*

"Honest, straightforward, tough." *Anthony Borja*

"One who appreciates and recognizes everyone's hard work." *Lance Barber*

What sources do you use to keep up with changes in the industry, learn about new products or methods, etc.?

"Attend seminars and conferences." *Anthony Borja*

"Internet, email, conferences, STMA shows and my peers" *Adam Niemczyk*

"Seminars, classes, Internet and expos." *Jody Yonke*

"*SportsTurf* magazine, CSTMA newsletter, STMA conference and networking." *Patrick Bellich*

"Conferences, "*SportsTurf* magazine." *Noah Windschitl*

"Co-workers and management." *Travis Jacobson*

"The best source I believe is have a discussion with people in the industry who have used the particular products or methods. Reviews are useful; seeing how professionals accomplish things. Acquiring feedback from the athletes." *Chris Roozing*

If you could have any job in sports turf management what would it be?

"Mower maintenance." *Adam Niemczyk*

"Working at a stadium for the NFL." *Anthony Borja*

"To work for an MLB or NFL team." *Noah Windschitl*

"Painting turf." *Lance Barber*

"Chicago Cubs' turf manager." *Patrick Bellich*

"Any job that includes sunshine and fresh air." *Chris Roozing*

"I enjoy working for sports turf managers. Becoming one is not something that I want to do at this point in my career." *Travis Jacobson*

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

"As technology keeps improving the sports turf managers job will evolve to include managing those technologies, e.g., automated irrigation with infiltration and moisture controls, rootzone temperature controls, grow light systems and perhaps construction of new fields that are orientated so natural patterns of Mother Nature aid in the overall wellness of the sports turf product. " *Chris Roozing*

What attracted you to a career in sport turf management?

"There are a lot of opportunities to grow in sport turf. Already have a passion and a lot of knowledge in sports from both playing and coaching. Great work environment being around sports." *Patrick Bellich*

How are you using social media at work?

"Posting Pictures of the job done. Sharing pictures in social media showing friend's family of the city stadium work and parks. Sharing pictures when at events around the city to spread the news. Movie nights, rugby games and beer fest." *Anthony Borja*

What are your biggest challenges in providing excellent playing surfaces?

"Repairing the pitch after tournaments, if the surface was wet during games, they get pretty torn up. We need more time between games for recuperation. Removing snow from the pitch without tearing it up.

"We pre-germinate our seed and mix with sand, it pops really fast. To remove snow we use small equipment, which doesn't damage grass. Can't do much for the time we have for repair time between games. Just do our best with the time we have." *Jody Yonke*

What is the greatest pleasure you derive from your job?

"Being able to work outside." *Noah Windschitl*

Biggest headache?

"Players practicing on the stadium playing field." *Noah Windschitl*

Why STMA should consider your field a winner?

We decided to install a heat system on a portion of the field to ensure playability and safety on one side of the field. The project was done completely in house from the design to the installation. Mark Razum with the Colorado Rockies was a big help in the initial specs on the wires that were originally installed in his facility. The heat cables changed how we manage a portion of the field but provide a huge benefit to the overall safety of a problem area. In preparation for the home opener on March 12 we were asked to remove grow blankets on February 29. This enabled the team to practice a few times leading up to their opening day. This led to a number of issues mainly weather uncertainty at this time of the year. Practices are very stressful on the playing surface and recovery is a long process until our ground temperatures come around. Because of our limited manpower basically when the grow blankets come off they don't typically go back unless there is an extended away game stretch. This year the first scheduled weekend off for the pitch was supposed to be July 17. The first part of the year was extremely challenging in that we ended up on the first seven games we ended up with a significant amount of snow that had to be plowed off the field. The field has no apron and only one entrance so all the snow is piled up on the berms on the sides of the field. With snow in the forecast I worked most of these weeks on removing the snow throughout the week to make sure that there was space to pile more accumulation for the following week. To add to the fun this year a professional Rugby league was formed and Glendale was chosen as the home field for one of the teams. The professional team trained mainly on outlying areas but used the playing surface for captain's runs and game days. The professional league did not finish their full schedule of games at our stadium because of financial issues. This was a huge help in that it gave us an opportunity to gear up and have some much needed recovery time before our August tournament. The tournament this year added a college tournament leading up to the international competition. In total we ended up with four days of play with a total of 80 games played. The seven's games are only 14 minutes so play is fast and furious. That equates to a total of 18.5 hours of actual play in the 4-day span. We ended up with a lot of divots but held up really well considering the amount of play.

Sporting Grounds Category

Rugby is a unique sport and foreign to many of us. The game will be played even if there is a foot of snow on the ground. We have very little say on whether or not a game should be played. It is up to us to make sure that the field is a playable and safe surface but do not have much input on cancelation or rescheduling. The game always goes on even if there is an injured player on the field. Rugby players see themselves as tough and see this as being just a part of the game. **/ST/**

FIELD OF THE Year

▸FIELD

RAIDERSSTADIUM-LACROSSE, ATLEE HIGH SCHOOL

▸LOCATION

MECHANICSVILLE, VA

▸ **Category of Submission:** Schools/Parks Sporting Grounds
▸ **Sports Turf Manager:** Marc C. Moran, CSFM
▸ **Title:** Agricultural/Horticulture Teacher
▸ **Education:** BS Agricultural Education
▸ **Experience:** I began working with the school's practice field in 2000 as part of a landscape class project in Lawn and Turf Care. I was then asked by my Athletic Boosters and Sports Administration to take over the Management of the Sports Turf Facilities in the fall of 2001. In 2002, I worked with other horticulture teachers in the county to develop a county based Turf Science curriculum, that curriculum was adopted by the Virginia Department of Education as a state based curriculum. In 2002, Atlee High School became the first high school in Virginia to teach Turf Science as a recognized course. Given the available access to sports fields, we adopted them as our "land laboratory." It has been a great partnership since the program began. Since starting the program, I have been heavily involved in the Virginia STMA Chapter and the National STMA where I have served on several committees.
▸ **Full-time staff:** Chad Meyers, Hailey Humphreys, Kevin Dunne, Corbin Wiles, Chris Green, Tyler Rigsby, Casey Farrar, Robbie Adelstein, Jason Brooks, Glen Carter, Brandon Doherty, Andrew Frowert, Garrett Faber, Hunter Fusco, Jack Harmon, Seth Haynes, David Keys, Sean Linder, Jack Mccain, Hayden Moore, Preston Tribble, Austin Zicafoose
▸ **Volunteer:** David Balderson
▸ **Original construction:** 1991
▸ **Rootzone:** Native soil, sandy loam
▸ **Turfgrass variety:** Our field was initially sprigged with Vamont Bermuda in 1991. In the last few years, we have been doing early summer sprigging or sodding of Patriot Bermudagrass in wear areas left by soccer and lacrosse.
▸ **Overseed:** We manage an aggressive perennial rye/dormant Bermuda overseeding program. In mid to late September, we overseed with Brigadier perennial ryegrass seed. We overseed at a rate of 10 lbs/1000 sq. ft. during the initial overseeding. We also follow up with a late-season overseeding of 2 lbs/1000 sq. ft. All seeding applications are done with walk-behind broadcast spreaders. We transition our ryegrass out in late spring with an application of Revolver herbicide. If needed, we follow up with a second application.
▸ **Drainage:** We employ a surface drainage system. Our field has a slight crown that drains water from the center to the sidelines. Water that is not absorbed is collected by two large storm drains on each sideline.

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.

Why STMA should consider your field a winner?

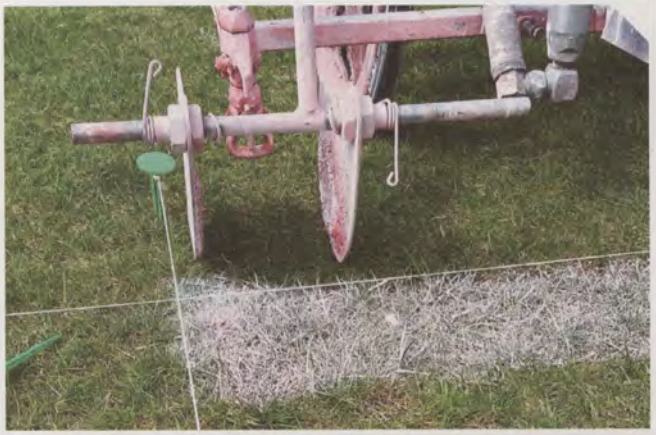
At Atlee High School, we face many challenges when it comes to the management of our lacrosse field and its related sports turf areas. Many of our challenges are not unlike most public schools across the country, but we have managed to take a unique approach to overcoming those challenges. Through administrative support (school and school board), athletic administration efforts, support of parents, industry partnerships and hard work, we have been able to take on each challenge with visible success and positive outcomes.

Our first major challenge, as with most people, is our operational budget. Being a public school, funding is concentrated in education programs and student development. We operate on a very small operational budget that must be stretched over 48 athletic teams. Through fundraising efforts and ticket sales from various events, we have been able to generate funds to focus on facilities. In the past, budget allotments to athletic fields and sports turf were only allotted on an as needed basis, and even what you needed wasn't always what you were given. With the help of athletic coaches, other groups that used our fields, athletic boosters and athletic administration we made sports surface safety and improvements a priority. We earmarked funds to focus on field improvements and maintenance. We also learned to plan and prioritize spending and place certain projects on a timeline so we can build funds for those improvements. We have looked to invest in quality used equipment instead of spending a large amount of funding on a new machine. By utilizing community resources and donations, we have been able to acquire a large compliment of quality equipment to maintain our facility. We also use our Agricultural Machinery Service curriculum as well as our Turf Science curriculum to teach students to repair, service, and maintain most of our equipment. Some repairs require professional diagnostics, so for those repairs we have to send those out for service.

Field use and scheduling have always were an issue when working with the fields. Working with the individual groups and teams, we organized a field use schedule and system that removed regular practices from our game surfaces, and moved them to improved practice facilities. An open line of communications has made this change very successful, and has greatly improved the overall quality of our fields. Only limited practice time and walk-throughs are permitted on the game facility.

> **WE CURRENTLY HAVE 58 STUDENTS ENROLLED IN OUR TURF SCIENCE COURSES AND EACH ONE WORKS ON THIS FIELD IN SOME CAPACITY.**
>
> *– Marc C. Moran*

Staffing and time are the two biggest challenges we face each day. Atlee High School does not have any full-time employees who are designated to athletic field maintenance. In the past, the school has relied on parents and coaches to maintain the facilities



and make management decisions. That being the case, most of the field work was done at great expense in regards to "extra" time by coaches, and weekend time by parents. When Atlee High School opened its Turf Science Program in 2001, it instantly became a perfect fit to teach students about the turf industry, sports turf, and to work to improve the school and its facilities. By using our sports fields as a land laboratory, our students get a hands-on approach to what it means to maintain and manage a large, high profile facility. This relationship has also helped to relieve the burden of field management from many coaches. Students mow, paint, fertilize, seed, and manage the facility. They make suggestions for improvements and identify challenges that may often go overlooked by many coaches. They take ownership in its appearance and work hard to improve every aspect of its operation. Their hard work has helped them earn 3 previous STMA Field of the Year awards for Football, Soccer and Softball.

We currently have 58 students enrolled in our turf science courses and each one works on this field in some capacity. They learn to operate reel mowers, rotary mowers, tractors, paint equipment, and a variety of other implements as well. Students also participate in the mechanical component of the curriculum where they work with diesel engines, hydraulics, and various mechanical systems to repair or service equipment that we use at the facility. Students even develop custom stencils for field graphics and designs that are to be painted on our fields. Every graphic and stencil that we use in our field marking is custom made by our students.

We take a hands-on approach to learning in the area of turf science. All students in the program receive a real-life exposure to the pressures and demands of managing a sports turf facility, as well as the high level of management that a quality playing surface demands. It has been a great relationship between a strong curriculum and a school that has strong need to for quality sports surfaces. These students manage nearly 22 8 acres of athletic fields every week with a weekly calendar that only allows 13 to 15 hours each week for maintenance. Just as in a professional setting, my students have to meet a time deadline and be ready to deal with any weather scenario that may come to us. We are constantly looking for new ways to tackle challenges and to make our facility better and better. It is truly a labor of love.

In 2010, we added lacrosse as a club sport in our school system and it became a full varsity sport in 2012 with both men's and women's being added. In 2014, our athletic administration decided it was time to move all varsity lacrosse (Men's and Women's) to our stadium facility that was already home to 4 soccer teams and their games. We learned very quickly that were going to have to improve our management or settle for severely worn creases and goal mouth areas. We suffered a very steep learning curve during the first season and worked very hard during the off season to make repairs and generate a new management plan that we hoped would help make the second season on the stadium much better. Through a close relationship with the coaching staff, we managed to establish a "No Pre-Game Zone" during varsity games that kept the goalie from warming up in traditional goal mouth. By simply moving the goalie during our pre- game routine, we were ale to severely reduce wear in our game goal mouth areas and keep that are pretty much covered in grass during the season. Along with our pre-game system, we included a pre- and post-game seeding program where we placed ryegrass seed in critical wear areas. This allowed for us to build a seed bank and allowed for turf healing during periods of no play. During the season we also experimented with sideline treatments to help relieve the stress in the player and coaches areas, but those efforts are still in the early stages and a lot of improvement is still needed in that area. We are currently seeking funding for a sideline tarp to place in the player and coaches areas to help relieve damage from traffic.

Since adding the two teams to our stadium, we have had to work harder to provide the level of safety, playability, and aesthetics that we have been known for over several years. We have enjoyed the challenge, and have battled through some frustrating times and seem to have an idea how to work within a relative new sport for us and have built a relationship with coaches and administration that has allowed us to improve with each season.

My students take a lot of pride and ownership in the facility and work hard to give our athletes and team the very best and try to create that Home Field Advantage.

Sporting grounds

During the spring, our main stadium is used for 3 varsity field sports as well as outdoor track. Traditionally, our field was only used for Soccer and Track, but in 2014 we added Varsity Women's Lacrosse and Men's Lacrosse to our games scheduled on the facility. Management

of the goal mouth areas for both lacrosse teams has been one of the biggest challenges while trying to minimize the dishing effect that often occurs with the goal mouth areas as the season moves along. Trying to manage those areas while trying to provide a safe surface for soccer also has been a truly challenging experience. All three of those spring field sports are state champion caliber teams and the expectation for a safe and playable surface is set very high by each team.

Marc Moran

Marc Moran writes:

"The success of the Atlee High School Turf Science Program can be attributed to several things. Aside from our group of hard-working students we have a built a program that is predicated on relationships with the turf industry, our community, our school/sports administration and our coaching staff."

"We have worked hard to try to include our school community in our program. Through social media and other efforts we try to keep our local community informed of things that we are doing on campus and other exciting things that are happening in the industry. Our community is the reason why our program has been able to grow over the past 15 years. Our community had changed; in order to meet their needs our school system saw a need to change as well. From that change came the Turf Management program within our Agriculture/Horticulture Department. We also offer workshops on turf care for the community. We have found that by working with the community and keeping them informed of the latest trends in turf management by addressing sound environmental practices and strategies.

We showcase the STEM principles so prevalent in the education arena today and we work hard to reinforce those principles to help our students in their other academic courses.

"One of the strongest relationships our program has forged over the years has been with our athletic administration. We have an open dialog daily that helps prepare for the work we do each day to prepare our facilities for any games that are being played or any special consideration for practice areas. We work the administration to prioritize management of fields and facilities and any work that needs to be done or will need to be addressed in the near or distant future. Our conversations focus on field safety, playability, and aesthetics. We work with our athletic director to determine the impact of weather and what adjustments may need to be made to game schedules in order to preserve the integrity of the playing service and safety of our student-athletes.

"We are directly involved in the long-term planning of our athletic complex and work with the administration to set realistic goals and immediate solutions to address pressing concerns that may show themselves before those future plans are implemented.

"We provide contracting services for the athletic administration and work with them to help with post-game stadium maintenance and we use those services to help fund equipment upgrades for our program and to build our resources that have allowed our program stay current with mowing and application equipment.

"An open dialogue with our coaches is where we have found that we can make the greatest impact. As a former high school coach and now a middle school coach, I call on those experiences as I work with coaches to provide them the best practice and game facilities possible. I try to meet with coaches at least weekly to see what they needs have and to also observe how they practice.

"We have found that by understanding their practice styles, we can better serve their need when it comes to field layouts and the management of high-wear areas. For example, our soccer coaches do a lot of half field work, so now we have modified our painting plan I order to allow them to slide their field day to day that has allowed us to nearly eliminate goal mouth wear that was so prevalent in the past. We have since developed rotation practice plans for Soccer, Football, Field Hockey, Lacrosse and Marching Band.

"Without interaction with our coaches, these changes would not be possible. They see us as a partner in their team's success and we take a lot of pride in giving them practice fields that may be equal to the competitions game facilities. Change is challenging for everyone, but showing an interest in their success has allowed us to progress in such a way that has allowed the change to be less painful and ultimately more rewarding for their team. In the past, we painted lines for drills, now we use cones. We would pregame in goal mouth areas, now we move the goal for pre-game. These small suggestions have helped our coaches maintain the integrity of the field and ultimately have helped us to reduce repairs and ultimately reduce operating costs.

"We have been building relationships in the turf industry since we started the program and actually before that. We used industry partners to help us build our curriculum and worked with those partners to make sure we are are current and looking to the future to remain relevant. Through experiences at STMA and our VSTMA Chapter, we have encountered tremendous support from sports turf professionals at all levels from across the country. Almost every facet of our program has been influenced by our involvement in STMA Conferences and publications. The willingness of the profession to share information has allowed us to grow. I strive to share that spirit of professionalism with my students and the partners that surround our program.

"We have been able to achieve the success we have had because of our connections with these groups. Our students take pride in being able to put the very best out there each day." **/ST/**

STMA Affiliated Chapters Contact Information

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

Colorado Sports Turf Managers Association: www.cstma.org

Florida #1 Chapter (South): 305-235-5101 (Bruce Bates) or Tom Curran CTomSell@aol.com

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

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

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

Georgia Sports Turf Managers Association: www.gstma.org

Greater L.A. Basin Chapter of the Sports Turf Managers Association: www.stmalabasin.com

Illinois Chapter STMA: www.ILSTMA.org

Intermountain Chapter of the Sports Turf Managers Association: http://imstma.blogspot.com

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

Iowa Sports Turf Managers Association: www.iowaturfgrass.org

Kentucky Sports Turf Managers Association: www.kystma.org

Keystone Athletic Field Managers Org. (KAFMO/STMA): www.kafmo.org

Mid-Atlantic STMA: www.mastma.org

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

Minnesota Park and Sports Turf Managers Association: www.mpstma.org

MO-KAN Sports Turf Managers Association: www.mokanstma.com

New England STMA (NESTMA): www.nestma.org

Sports Field Managers Associationof New Jersey: www.sfmanj.org

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

North Carolina Chapter of STMA: www.ncsportsturf.org

Northern California STMA: www.norcalstma.org

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

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

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

Ozarks STMA: www.ozarksstma.org

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

Southern California Chapter: www.socalstma.com

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

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

Texas Sports Turf Managers Association: www.txstma.org

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Snow mold

Q: I have received two questions about snow mold disease recently: Should we apply a fungicide if we plan on covering the field with a growth blanket this winter and if so, when? And, we can't spray a fungicide before winter for snow mold, but if we see damage from snow mold on our young ryegrass next spring, what should we do?

A: Quick snow mold re-cap: snow mold is a common disease problem in northern states during winter and early spring. Microdochium patch/pink snow mold is probably the most common snow mold that develops during a snow event. In the absence of snow the disease is referred to as fusarium patch. Typhula blight/gray snow mold is the second most common snow mold. In the case of Typhula blight prolonged snow cover is required for disease development. Perennial ryegrass and annual ryegrass are particularly susceptible to snow mold, especially on immature, lush, succulent stands of grass seeded in the fall. If snow mold has been an issue in the past, it's wise to be prepared.

The growth blanket will provide environmental conditions not dissimilar to prolonged snow cover, making the turf more susceptible to snow mold. So yes, if you are planning on putting a growth blanket on a field over the winter period it is advisable to apply a preventative fungicide before covering. I assume the reason for covering the field is that there are games scheduled very early in the spring. Growth covers that are permeable (i.e. breathable) are more beneficial than impermeable ones. Impermeable covers increase the temperature and humidity under the cover and so increase the likelihood of snow mold. Making one application of preventative fungicide just before covering the field, or just before the first snow event of the season, has been shown to be more effective than making fungicide applications earlier in the fall. Also, a liquid application is typically more effective than a granular application.

While it is widely accepted that a preventative fungicide is the most effective way to prevent snow mold problems, there are other turf maintenance practices that will help minimize snow mold damage and boost the turf plant going into the winter season. These practices are especially important if there are pesticide restrictions and a fungicide application can't be made. There really aren't any biological options for snow mold prevention or control.

Snow mold issues are exacerbated if the grass is laying over, is covered in leaves, or has excessive thatch. Cultural practices that minimize thatch and surface debris are important, as is mowing just slightly lower than normal during the last mow of the season. The ultimate goal is to enter the winter season with a short, clean sward.

A common practice on cool-season turf is to apply a late-season fertilizer application with a quick-release source of nitrogen at the end of the growing season, when the grass is still green but it has stopped growing. This application is not the same as a fall fertilizer application, when turf is still growing. Applying quick-release sources of nitrogen in the fall should be avoided as it leads to lush, weak plants going into the winter season. The crucial difference is that the late-season application is made when top/leaf growth has stopped but soil temperatures are still warm enough for nitrogen absorption. The misconception is that the late-season fertilizer application encourages or increases the severity of snow mold disease, but it does not. The late-season fertilizer application will help boost turf quality and green-up the following spring, without excessive top growth. Some care should be taken however, to make sure that the fertilizer application rate is not too high, particularly on sand-based fields, to prevent nitrogen leeching.

Another pre-winter practice could include applications of the plant growth regulator trinexapac-ethyl. Applying trinexapac-ethyl between July and September does not necessarily reduce the incidence of snow mold, but it does increase levels of fructan in the crown of the turf plant, which could improve winter survival and enhance turf quality and green-up the following spring.

In regard to the second question, prolonged rainy periods and cool to moderate temperatures in early spring are ideal conditions to prolong the disease, so it may linger until warmer and dryer weather arrives. A snow mold recovery plan would include: Check damaged areas by looking at the crowns to see if they are alive and producing new leaves. Lightly rake the grass to promote air circulation and encourage light to penetrate the canopy, encouraging new shoot and leaf development. You want to dry the sward.

If there is any dead and/or matted leaf tissue, rake and remove it immediately. In the case of dead turfgrass, renovation of the site would be recommended as soon as possible. Removing diseased and dead material in the spring is an essential part of reducing the source of inoculum on the field. Plan to overseed with turfgrass varieties showing greater genetic resistance to snow mold infection.

Fungicide applications at this time will not eliminate the disease from affected areas but only protect non-infected grass. On high profile-turf an application of fungicide may be warranted. **/ST/**

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