

IN THIS ISSUE: Biostimulants, revisited

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SEPTEMBER 2017

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Amy Fouty, CSFM, a great friend of this magazine and the athletic turf manager at Michigan State, and her only full-time football staffer, Andy Flynn, CSFM, were awarded the 2016 STMA College Football Field of the Year Award. Since the turf modules were installed in 2002, the field has only been re-sodded once, following a concert. "We regenerate the field each year from seed. The maintenance program has basically been the same since the 2004 season," Amy says.

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FROM THE SIDELINES

Short-course collaboration working well



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

MANY UNIVERSITY TURF PROGRAMS across the country currently offer a turfgrass short course, but in recent years many institutions across multiple states have merged to provide joint short courses. The Great Lakes School of Turfgrass Science, which debuted in 2014, is a nine-state online collaboration with a goal of improving a turfgrass short course in this era of increasing costs and decreasing numbers of university Extension faculty. These facts have made it more difficult to provide quality turfgrass short course education.

For nearly 100 years, turfgrass short courses have offered highly applicable educational and advancement opportunities for turfgrass managers outside formal college or university settings. The first turfgrass short course in 1925 was at the Massachusetts State Agricultural School, and similar 8- to 12-week courses were initiated in subsequent years at Penn State and Rutgers University. Illinois and Indiana were the first states to merge, in 1994. The mergers allow larger numbers of participating short course faculty.

Faculty from nine institutions collaborated to develop the Great Lakes School, an online course that provides students with unique learning experiences through a combination of assigned readings, quizzes, lectures, and live instructor discussion. Student attendance increased and costs decreased relative to traditional in-person short courses. Additionally, student feedback has been overwhelmingly positive. These results demonstrate that online courses such as this can provide an effective and flexible source of knowledge that meets the busy schedules of students and instructors.

Each week an expert in a particular area teaches a topic. This lead instructor presents a live lecture to the class via Google Hangouts, which is embedded in a Moodle class management website. Two or three additional instructors participate in the lecture, asking questions and initiating discussion. Typically, following the main presentation, the course administrator and other instructors engage in a 15-20 minute roundtable discussion on the topic(s) covered. These discussions are not scripted and tend to hit on the latest trends or controversial subjects that were not presented in the main lecture. More than 90% of the students surveyed indicated that these discussions were helpful to their understanding of the associated topics.

"The Great Lakes School will be offered for the fifth time in winter/spring of 2018, running for 12 weeks with live sessions every Wednesday night, led by one of our 12 professors from across the Great Lakes region," says Dr. Sam Bauer, assistant extension professor at the University of Minnesota. "Moving to the online format has allowed us the ability to tap the expertise from the top researchers and professors in turfgrass science. Each year, 75 or more participants partake in this opportunity from various sectors of the turfgrass industry including sports fields, golf courses, lawn care, cemeteries, parks management, and suppliers.

"Many previous participants have highly valued this school and have advanced their career because of it," adds Bauer. "In addition to the entry-level turf school, we will also be offering an advanced version in 2018." **/ST/**

For more information on the school or to sign up, visit turf.umn.edu or contact Sam Bauer at sjbauer@umn.edu.

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PRESIDENTS MESSAGE

Help, ask and offer



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

WITH THE FALL SEASON UPON US and in full swing, I am excited for three reasons. The first is that football season is here. I really love the challenge of preparing a football field for battle; I always welcome my goal of having it play the same from game one until the end of the season. The second is that the hot weather is on its way out, replaced by cool, crisp mornings leading into days when it's wonderful to be outside. The third reason is one guilty pleasure that I have held onto as much as possible with having a family: bow hunting for whitetails is my absolute getaway; time to read, self-reflect and decompress from life's stresses. We all have our things!

I titled this message "Help, ask and offer" to drive home the point about one of the best parts of our industry. I find it rewarding when former Iowa State University students and interns call to talk "turf" or to ask for help. It is rewarding to field questions about how to deal with an employee, a boss, a turf situation, or simply to talk them down from being upset about an outside event. The best part of these situations is that most of them already know what to do; they are just seeking confirmation or some confidence in the situation that they are problem solving.

I hope they learned this behavior from watching me ask questions of other professionals or company representatives who know more about a particular subject than I do. For example, I am not a pathologist, so there are chemical representatives and PhDs who are far more equipped to help with an annual summer patch problem that I fight in Jack Trice Stadium. Last month was the first August that I have been free from summer patch since 2011. Through bringing in others to help, we finally solved a problem that kept me up nights (at least for this year!).

When asking for help you can solve a problem with someone else invested. If each of us is invested with others, our industry will thrive and grow. If we are available to field a call or be humble enough to ask for help when we don't know something, I believe that only benefits all of us. Usually when trying to come up with a solution to a problem, it's far more efficient to ask others who have already solved the problem than try something that fails.

The STMA is known for its education and for helping people solve problems. That said I feel members who are willing to share ideas and members who are willing to ask for help best use the STMA. We all have the same mission: safe playing surfaces. Let me or STMA headquarters know if we can help, it's what we do! **/ST/**

@cycloneturf

Biostimulants, revisited

// By STANLEY KOSTKA, PHD, AND MICHAEL FIDANZA, PHD



Figure 1. Application of amino acid and peptide formulations can improve turf performance when stressed due to saline conditions. Photo credit: Bioiberica S.A., Barcelona, Spain.

Our industry contains a vast array of biostimulant products claiming positive effects on plant or soil health, particularly under stress conditions. But what are biostimulants?

What is a biostimulant?

Within the context of sports turf, the earliest definition of a biostimulant appeared in a scientific paper by Zhang and Schmidt at Virginia Tech in 2000, and focused on the effects of a hormone containing product on drought tolerance in tall fescue and creeping bentgrass. They defined biostimulants simply as "

... materials that, in minute quantities, promote plant growth."

Over the past 17 years, different definitions have been proposed in North America and in the European Union. From a regulatory perspective, an accepted definition does not exist, in North America or in Europe. In the absence of an official legal definition, these products are often regulated as soil amendments or as fertilizers. How these products are defined will ultimately control how they are regulated on the state and national levels.

In 2012, the European Biostimulants Industry Council proposed the following:

plant biostimulants contain substance(s) and/or micro-organisms whose function when applied to plants or to the rhizosphere is to stimulate natural processes to enhance/benefit nutrient uptake, nutrient efficiency, tolerance to abiotic stress, and crop quality (<http://www.biostimulants.eu>). This definition is consistent with proposals from the Biostimulants Coalition in North America (<http://www.biostimulantcoalition.org>). Considerable debate is ongoing, with a group even suggesting that such products must be exclusively of "biological origin" to be considered biostimulants.

What do biostimulants do?

Biostimulants foster plant growth and development throughout the crop life cycle from seed germination to plant maturity in a number of demonstrated ways, including but not limited to:

- Improving the efficiency of the plant's metabolism to induce yield increases and enhanced crop quality
- Increasing plant tolerance to and recovery from abiotic stresses
- Facilitating nutrient assimilation, translocation and use
- Enhancing quality attributes
- Regulating and improving plant water balance
- Enhancing certain physicochemical properties of the soil and fostering the development of complementary soil microorganisms.

There are several generally accepted categories of plant biostimulants. These include humic and fulvic acids, protein hydrolysates and N-containing

compounds, seaweed extracts and other botanicals, chitosan and other biopolymers, inorganic chemicals, beneficial fungi, and beneficial bacteria.

Humic and fulvic acids. Humic substances (HS) are the largest constituents of soil organic matter (upwards of 60%) and are responsible for many chemical interactions via their ability to interact with metal ions, oxides, hydroxides, mineral and organic compounds and to dissolve, mobilize and transport metals and organics and influence nutrient availability. HS enhance root, leaf and shoot growth may also stimulate the germination. However, distinguishing between the direct and indirect effects of these substances is challenging. In fact, some of their positive effects may be ascribed to a general improvement of soil fertility, leading to higher nutrient availability for plants. HS have been shown to contain auxin and an "auxin-like" activity of humic substances has been proposed, but support for this hypothesis is fragmentary at this time.

The source of the HS, the environmental conditions, and the manner of application all influence observed effects.

HS are derived from a variety of sources each having different chemical properties. They may be extracted from naturally occurring organic matter (such as peat or muck soils), from composted organic matter or vermicomposts, or from leonardite, a form of lignite (brown coal). Alternatively, agricultural wastes and byproducts may be processed (reacted under controlled conditions) to produce compounds referred to as "humic-like" substances.

Protein hydrolysates and other N-containing compounds. This class is composed of amino acids and short chain peptides derived by chemical or enzymatic hydrolysis of plant or animal by-products, fermentation metabolites by microorganism, or chemical modification. Included in this group are nitrogenous compounds such as polyamines, betaines, and non-protein amino acids.

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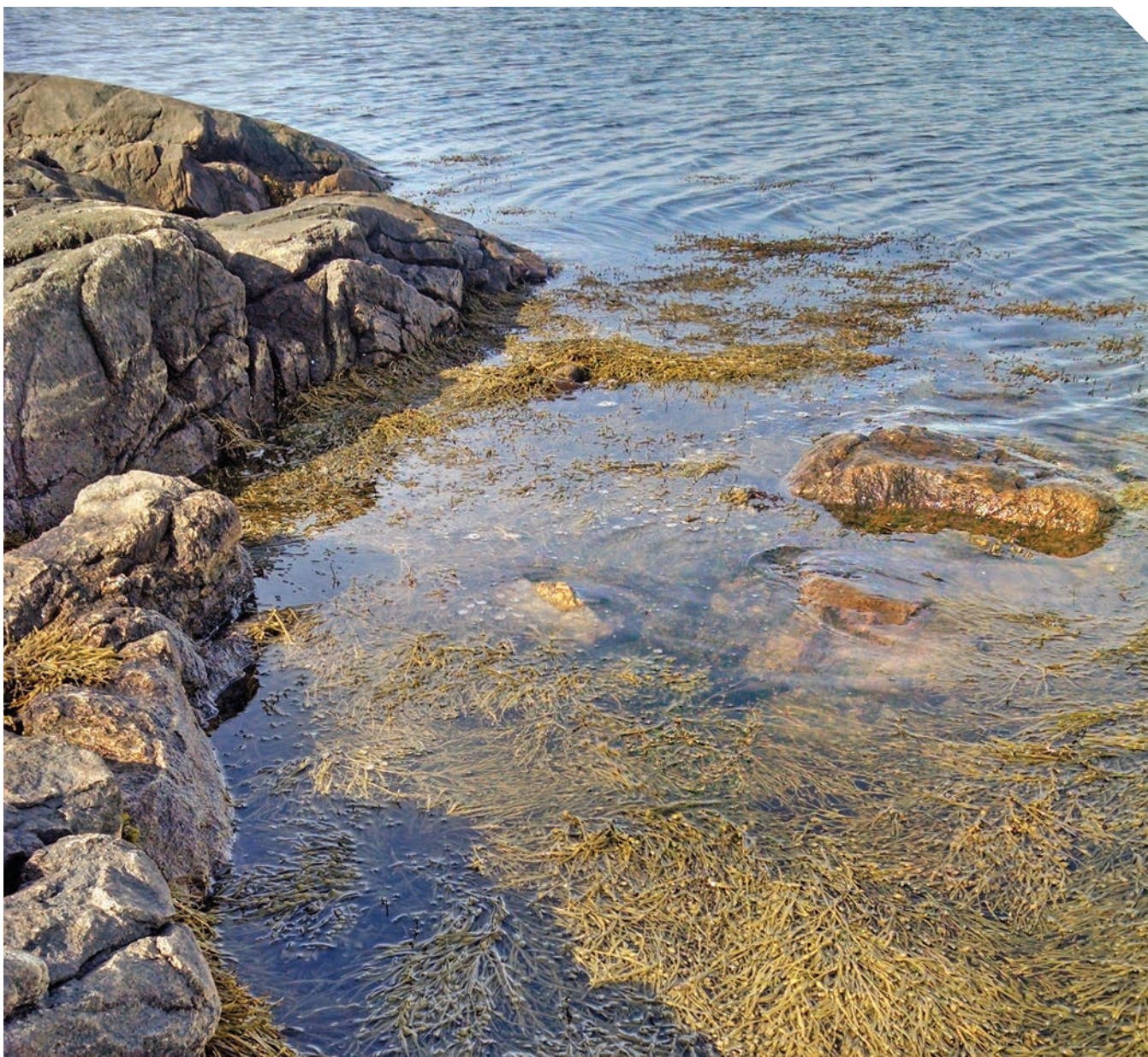


Figure 2. *Ascophyllum nodosum*, a primary source of seaweed extracts growing on the coast of Maine. Photo credit: Ocean Organics, Waldoboro, ME.

These compounds can have diverse activity in treated plants or soils. Amino acids and short chain peptides have been reported to increase N uptake and its assimilation. Hydrolysates of complex proteins and tissues have also been reported to have hormonal-like activity. Certain amino acids (for example glycine) have been reported to have chelating effects resulting in better access to and bioavailability of micronutrients. Other responses from amino acid and short chain peptide applications, for example phenylalanine, include

increased production of antioxidants, key components in dealing with abiotic stress (heat, light, or salinity) (see Fig. 1). Proline is reported to be involved in plant responses to water stress. When applied to soil, microflora (bacteria and fungi) can readily access and assimilate the amino acids, resulting in increased soil microbial biomass, which is considered to be an important component of soil health.

Alternatively, amino acids have also been shown to be readily available N-sources for rapid root and foliar uptake in plants, including turfgrass, suggesting that they

also have potential as fertility management options or to maximize plant use of the existing soil nutrients. This last application is intriguing, especially for recovery of turf with a compromised root system or in environments where N leaching concerns may preclude other N sources.

Seaweed extracts. Seaweed extracts (SWE) are commonly derived from brown, green, or red macroalgae and have been used in turf since the 1950s. Extracts of brown seaweeds (see Fig. 2) are widely used in turf due to their well-documented effects on growth promotion and mitigation

of abiotic stresses, including salinity, extreme temperatures, nutrient deficiency and drought.

A range of manufacturing processes including, alkaline or acid hydrolysis, cellular disruption under pressure, or fermentation followed by various separation technologies are used to produce SWE. As a consequence, considerable heterogeneity in extract constituents and stability may exist between SWE produced using different extraction processes.

The chemical constituents of SWE include polysaccharides, fatty acids, vitamins, elicitors, phytohormone-like compounds, and mineral nutrients. When applied to soils, SWE polysaccharides behave as gels increasing water retention and potentially influencing aeration. By modifying soil water, SWE also impart positive effects on soil microbial populations, especially plant growth-promoting rhizobacteria (PGPR) that provide the plant with phytohormones, facilitate nutrient uptake, or are sources of biopesticidal metabolites or activators of plant defense responses such as laminaran, fucoidan, alginate, and ulvans.

SWE also have direct plant effects associated with phytohormone like properties of the extract (cytokinin-like activity) or regulatory effects on biosynthetic regulation on hormone synthesis at the cellular level. Up regulation of antioxidants in response to water deficit and elevated temperatures is well documented in SWE treated turf, enabling treated plants to better withstand periods of high evaporative demand, limited water inputs and heat stress (see Fig. 3).

Chitosan and other biopolymers. Chitin is the second most important natural polymer in the world. The main sources exploited are shells of marine crustaceans, particularly shrimp and crabs. Reacting chitin with an alkaline substance such as sodium hydroxide produces chitosan (CHT), a linear polysaccharide composed of randomly distributed β -(1 \rightarrow 4)-linked D-glucosamine and N-acetyl-D-glucosamine.

CHT has been documented to stimulate plant growth, to protect the safety of edible products (as a preservative), and to induce biological responses to abiotic and biotic stresses. CHT interacts with a wide range of cellular components ranging from DNA to plasma membranes to cell walls where binding to specific receptor sites for defense gene activation resulting in some systems in increased protection against pathogens, but more broadly as enhancing tolerance to abiotic stress (drought, cold, and salinity) resulting in better plant performance and crop quality.

Activity is based on CHT structure and concentration and on the plant species and its developmental stage. Most research on CHT has focused on application as an elicitor of stress response signaling, for example, stomatal closure, a means of management of transpiration and water use. There is considerable research ongoing to understand the mode of action of chitin and chitosan polysaccharides in both stress tolerance and suppression of pathogens. Complex polysaccharides from SWE have similar effects.

Inorganic compounds. Inorganic compounds encompass elements and many of their salts. Certain elements, including aluminum (Al), cobalt (Co), sodium (Na), selenium (se), and silica (Si) are recognized as "beneficial elements." While essential for certain plants, they are not required by most species but can play a role in management of abiotic

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Figure 3. Effect of seaweed extract on turf performance under heat stress. Photo credit: Stan Kostka, PhD.

and biotic stresses. These beneficial elements may enhance resistance to attack by certain insect pests and pathogens, and more broadly to abiotic stresses such as drought, salinity, and nutrient toxicity or deficiency.

Mineral salts including silicates, phosphites and phosphates, but also bicarbonates, sulphates, nitrates, may provide protection against fungi via direct fungicidal action or indirect protection by stimulating plant defenses. Some due to their effect on plant physiological processes influence quality and yield in the absence of biotic stress. For example, silicates (salts of silica) are involved in strengthening plant cell walls and have also been reported to have disease suppressive effects. Phosphite (Phi) or its conjugate phosphorous acid, a reduced form of Phi and inorganic salt, has been used as a pesticide, supplemental fertilizer, and as a plant biostimulant. As a plant biostimulant, Phi improved nutrient uptake and assimilation, abiotic stress tolerance, plant quality, and root growth. In horticultural crops, Phi has been reported to increase yield and nutritional value. Their action on the physiology of the plant, on stress response, and on yield explains why these inorganic compounds are sometimes referred to as biostimulants.

Fungi. Fungi and plants have co-evolved since terrestrial plants first appeared on earth. Beneficial fungi such as mycorrhizae are fungi that form a symbiotic relationship with plants, and 90% of all plants species have a symbiotic relationship with fungi. Mycorrhizae colonize roots and provide increased water and nutrient absorption while the plant feeds the fungus with carbohydrates from root exudates. Research on various crops has shown that arbuscular mycorrhizal fungi can act as “biofertilizers” (interacting with the plant’s rhizosphere to absorb and translocate mineral nutrients), “bioregulators” (interacting with the host plant to influence plant development), and “bioprotectors” (inducing a plant’s tolerance to abiotic and biotic stresses).

There are many mycorrhizal and soil inoculant-type products available today that claim to improve plant growth and plant health. Success of these products rely on the ability of the fungal organism to be delivered to the rootzone and effectively colonize and establish a relationship with existing roots. With sports turf management, it means not only applying the fungal organisms but also creating rootzone conditions that favor their successful growth and development.

Current research on the new frontier of soil microbiomes and metagenomics may yet reveal mycorrhizae and other fungi that can effectively colonize and successfully populate the rootzone to the benefit of the plant.

Bacteria. Bacteria can interact with plant roots in many ways, from a mutualistic partnership where bacteria and plants live in direct contact to the benefit of both, to parasitism and infection. Bacterial niches can form in the soil rhizosphere and rhizoplane and even into the interior of plant cells. These bacteria/plant interactions can be temporary to permanent. Bacteria can play a role in soil and plant biogeochemical reactions, increased nutrient availability and nutrient use efficiency, induced disease resistance, improved tolerance to abiotic stress, and possibly more. Some examples of bacterial species used in biostimulant products include *Rhizobium*, *Bacillus*, *Pseudomonas*, and others, including mutualistic rhizospheric plant growth promoting rhizobacteria.

Current research agrees that growing health roots produce exudates that essentially select for the “good” bacteria and other microorganisms favored by the plant. The challenge has always been this: how to get introduced bacteria to colonize

and populate the soil and rootzone quickly and effectively. In the past, inconsistent results of these microbial products have been attributed to the formulation. These products may also require special handling such as refrigeration, or a fermentation process, or other specialized methods of storage, production, and even delivery. The good news is that many biological and specialty chemical companies are investing heavily into research on improving the formulation and delivery of these microbial biostimulant-type products, and they are regarded as plant “probiotics” that will contribute to plant health and immunity.

Where do we go from here?

Many biostimulant products are formulated from multiple components and/or are of undefined composition. While activity may be measured from such formulations, is the observed plant or soil response a consequence of a single or a multiplicity

of components? In studies conducted in growth chambers and in greenhouses, effects of single components can be measured; however, measuring such effects in the field is often more challenging. One or more complex formulations may need to be applied to observe a visual plant response. The challenge then becomes to explain what components were responsible for the observed effects.

Moderating stress is a key component to building a healthy, resilient turf stand. As stress builds a number of plant processes may be compromised: efficiency of light and carbon capture declines; destructive reactive oxygen species (free radicals) increase in shoots and roots; roots take a “double-hit” because shoots stop allocating energy to roots and may pull energy from roots; and root decline (coupled with pressure from secondary plant pathogens) precedes shoot decline. Biostimulant-containing products provide management options to maintain turf performance under stress.

Should a biostimulant product become a valuable part of your turf management program? This all depends on what exactly a turf manager wants to accomplish (i.e., better rooting, better heat or drought stress, traffic tolerance, turf recovery, disease prevention, better color or visual quality, better playability, and more). Be sure to critically evaluate your turf for the response you want (i.e., better rooting, improved stress tolerance, etc.). Also be sure to review all available information, and consider that the use of a biostimulant or any product should be predicated on results from independent and replicated third party research. **IST/**

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Amended attitude

A new commitment to soil health using compost

// By GARY GITTERE

Editor's note: Gary Gittere is the sales and marketing manager for McGill Premium Compost and President of the North Carolina Composting Council.

Over the past several decades, sports turf managers, farmers, and homeowners have embraced modern science by using synthetic chemicals to reduce turf diseases, increase crop yields and make lawns green. The use of synthetic inputs has indeed shown immediate and impressive results; yet are the long-term effects as beneficial as they seem?

When a soil analysis is taken, the focus is primarily on what the turf or plant needs related to nutrients, pH, etc. A renewed perspective of analyzing soils is emerging; instead of looking at turf needs from the top down, the new shift is looking at the soil, from the bottom up. This shift is showing us that using inputs in the quantities prescribed may not be necessary resulting in a two-fold benefit: reducing the impact on the environment and saving money.

By analyzing the chemical, physical, and biological properties of a given soil, we can determine what it actually needs – without the guesswork – which is more beneficial to the performance of the vegetation.

Novel tools and techniques are currently being used to help detect microbial populations in diseased and healthy soils. As the Soil Science Society of America states: “Soil provides ecosystem services critical for life: soil acts as a water filter and a growing medium; provides habitat for billions of organisms, contributing to biodiversity; and supplies most of the antibiotics used to fight diseases.”

You may not realize that there are more living organisms in a teaspoon of healthy soil than there are people on the earth. So why is this important to anyone managing turfgrass, plants or crops? *Soil organic matter*, the lifeblood of a healthy soil environment.

Organic matter includes any plant or animal material that returns to the soil and goes through the decomposition process. Plants obtain nutrients from two natural

THERE ARE MORE LIVING ORGANISMS IN A TEASPOON OF HEALTHY SOIL THAN THERE ARE PEOPLE ON THE EARTH.

sources: organic matter and minerals. In addition to providing nutrients and habitat to organisms living in the soil, organic matter also binds soil particles into aggregates and improves the water holding capacity of soil. The US Composting Council's Strive for 5% program states: use of STA *certified* compost will help you confidently achieve 5% organic matter efficiently and cost effectively by using compost, produced from locally recycled organic residuals.



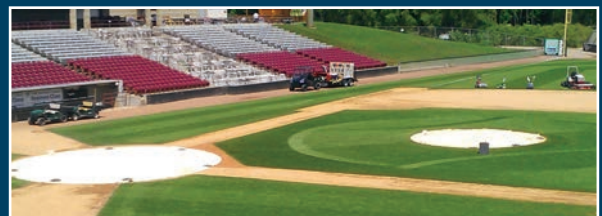
Washington Redskins' training facility, Richmond, VA

Most of our soils today are depleted of valuable organic matter creating challenging environments for the proliferation of plants and turfgrass. Improving the health of our soils by increasing soil organic matter results in billions of microorganisms that help to fight soil borne diseases, improve water holding capacity, and more efficiently use organic and non-organic nutrients. Organic matter positively influences, or modifies the effect of, all three soil properties.

When soil organic matter is minimal, it becomes increasingly difficult to establish and grow turf and plants due to issues with fertility, water retention, compaction, erosion, and diseases. A common challenge heard in the sports turf world is the impact of heavy play on sports fields. This creates a major challenge when attempting to improve vegetative cover on these fields. As down time is normally limited, how can the turf establish itself before play resumes? More positive results are likely when the soil is evaluated and the proper level of organic matter established. A healthy and sustainable soil environment will help foster the establishment of the plant roots, lessening the impact of renewed play and reducing the need for continual sprigging, seeding, or sodding.

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RICHMOND, VA

Many recent projects have reaped the benefits of using compost and are specified by engineering and landscape architectural firms. An example is the recently constructed training facility for the Washington Redskins in Richmond, VA that used 2 inches of premium Compost amended into the native clay soil, to ensure the Bermuda sod would effectively root. The company maintaining the facility was so impressed with the results that it chose to topdress with the same compost on both the practice fields and surrounding areas in subsequent years, helping to ensure and maintain a healthy soil environment. Similar projects have been specified for sport field renovations in North Carolina, Virginia, West Virginia, and many other states.

Past and current studies conducted by Cornell, Penn State, Ohio State and others, outline the many benefits of using a soil amendment such as compost on sports fields to create healthy soils. Amending poor soils with a product high in microorganisms, such as compost, is one of the best things you can do for your soil. As stated by Penn State's "Using Composts to Improve Turf Performance": "If you have been searching for ways to improve turf performance in marginal or poor soils, consider using compost as a soil amendment. In clay soils, good quality compost will improve structure, reduce surface crusting and compaction, promote drainage, and provide nutrients. In sandy soils, compost increases water and nutrient retention, supplies nutrients, and increases microbial activity. These improvements promote faster turf establishment, improved turf density and color, increased rooting, and less need for fertilizer and irrigation."

Dr. Eric Nelson from Cornell University states in "Using Biological Control Strategies for Turf":

"Over the past 10 or 15 years, studies have clearly demonstrated the potential for composts to reduce the severity and incidence of many turfgrass diseases. For example, monthly topdressing applications of composts at rates as low as 10 pounds per

1,000 square feet are effective in suppressing diseases such as dollar spot, brown patch, Pythium root rot, Pythium blight, necrotic ringspot, red thread and Typhula blight."

Selecting a compost

When selecting a compost to ensure desired results on sports fields it is essential to locate and use a product of high quality and consistency. Fortunately, the modern composting industry makes this possible. A procedure used by F. Dan Dinelli, CGCS, helps ensure the compost chosen is optimal for his use. It involves a series of tests analyzing the chemical, physical and biological activity of the material. From a chemical perspective, you want to choose compost that has a low C/N ratio (<16:1), a pH in the range of 6.5-8.5, and a compost that is stable and mature. Physical characteristics include moisture levels at 35-45%, a well-screened product, and dark brown or black in color. A great diversity of bacteria, fungi, protozoa, and beneficial nematodes provides the guidelines from the biological perspective.

The microbial populations in compost can be identified and quantified at a very modest cost. Selecting a compost that participates in the US Composting Council's Seal of Testing Assurance Certification program will ensure the material meets stated parameters and adheres to your desired needs.

Parks and recreation departments are challenged every year with ensuring that their heavily-used sports fields are safe for residents to use. By amending these native clay soils with a premium compost, you will begin to create a healthy planting environment. You will increase organic matter in the soil helping to create a much safer playing surface and quicker establishment of vegetation that will more effectively survive the rigors of heavy play.

Ensuring playing fields are safe by using methods that include compost will help improve turfgrass coverage and reduce soil compaction. Buffering pH levels, improving the soil's water holding capacity, increasing the cation exchange capacity to reduce and improve synthetic chemical utilization, are just a few of the many benefits of using compost as part of your fertility program.

I challenge you to Amend Your Attitude and contact your local college or university's Turfgrass Department, fellow golf superintendents, or turfgrass manager at a nearby Parks & Recreation department to discuss how they are creating healthy soils using compost. You may be surprised at the feedback you receive and hear the excitement in their voices as they impart the impressive results they are obtaining with compost. **/ST/**



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////////

ANSWER
ON
PAGE 37

CAN YOU IDENTIFY THIS SPORTS TURF PROBLEM?

PROBLEM:

Dead turf in lined areas

TURFGRASS AREA:

Multi-purpose field

LOCATION:

Recreational soccer field

TURFGRASS

VARIETY:

Bermudagrass



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- Accelerating turfgrass growth in the spring
- Protecting the field during precipitation events
- Reducing game cancellations
- Promoting rapid seed germination

But how long can the tarp cover the field before the grass is damaged? The answer: it depends. STMA's Information Outreach Committee provides their recommendations for keeping your field healthy and playable.

What are weather conditions?

Tarp coverage times are extremely dependent on daily temperatures and sunshine. If air temperatures are greater than 60 degrees F and it is bright and sunny, grass can get cooked or die within

a few hours under a tarp. The tarp creates a greenhouse effect and temperatures can soar quickly and kill the grass.

How do weather conditions dictate how long the tarp can stay down? The field manager should be consistently checking the conditions under the tarp and watching the weather closely. In late winter and early spring, tarps can stay on the field between 48-96 hours if air temperatures are below 60F. During warmer temperatures (above 60) when turfgrass is actively growing, tarps can stay on the field between 24-36 hours. Monitoring conditions under the tarp becomes crucial in warmer temperatures due to disease potential and high temperatures. After 24-36 hours, the tarp should be removed to allow for air exchange and light exposure.

When should the tarp be put on and removed in a rain event? If rain is predicted, most field managers wait to put the tarp down as close as possible to the rain

event and remove it as soon as possible after the storm. In warmer weather conditions, the tarp should not stay down any longer than 24 hours. If there is a break in rain, it is important to take the tarp off and leave the grass exposed for as long as possible before putting it back on for more weather.

Should I tarp a skinned infield area? Tarping a skinned infield area may prevent it from drying out in the spring. Additionally, a tarp can be used for immediate protection in a rain event to keep in fields from becoming too wet in sudden downpours.

What about applying fungicides?

Monitor temperatures and soil moisture under the tarp. Favorable conditions for disease development skyrocket when temperatures beneath the tarp start to get above 80F and soil moisture is high. Diseases such as Pythium blight can cause significant damage to tarped grass

in a very short time span. Cool weather diseases such as pink snow mold do not require snow cover and can develop under a tarp. Consider a preventative disease control program, whether it be using preventative fungicides, or making a phosphite fertilizer application.

Will turfgrass color be affected? Turfgrass plants will start to yellow after 24-48 hours of being covered. Typically, the field can recover and grow out of discoloration within a few days. The longer the tarp stays on, the more severe the chlorosis will be. Research conducted at Virginia Tech investigated how tarp color affected turfgrass quality. Although there is a lot of variability associated with how soon the turf yellows, a darker colored tarp accelerates yellowing of the grass plants. This can be attributed to reduced light penetration for photosynthetic activity to occur.

As a field manager, be sure to check weather conditions and monitor temperatures under the tarp. Tarp for



rainfall on a case-by-case basis depending on time of year, moisture content in the field, amount of rain forecasted, timing of rain, and atmospheric conditions. Cycle the tarp on and off the field as needed to allow for air exchange and light exposure. Paying attention and monitoring conditions can help prevent disease, chlorosis, and turfgrass death. **/ST/**

Thanks to the 2017 STMA Information Outreach Committee for compiling this information. Members include (Nick McKenna, CSFM; Peter Auth; Brad Fresenburg, PhD; Mike Goatley, PhD; James Hlavaty, CSFM; Jason Kopp; Jeff Langner; Doug Linde, PhD; Henry Mayer; and Tony Strickland, CSFM. Other contributors included Dan Douglas and Nicole McFadyen.

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AMINO ACID APPLICATIONS FOR SPORTS TURF

// By JEFF HAAG

It has become commonplace for fertilizer manufacturers to incorporate amino acids into their various granular and foliar fertilizers; are they necessary? This article will attempt to explain why they are in the sports turf system, as well as explain what each of the 20 essential amino acids are for in the turf plant.

Amino acids are the molecular building blocks of proteins. Amino acids all share a structure, with a central carbon atom, an amino group, a carboxylic acid group, and a group designated as an R group, which varies in structure from amino acid to amino acid. It is the diverse nature of the R group that provides the protein with many of its structural and functional characteristics. Some R groups are either polar or electrically charged at physiological pH, making the R groups hydrophilic (water-loving). Other R groups are non-polar and hydrophobic (water-avoiding).

Plants synthesize carbohydrates by photosynthesis; low photosynthesis results in slow or no growth. Chlorophyll is responsible for the facilitation of absorbing energy from light. Glycine and glutamic acid are the essential metabolites in the process of the formation of healthy leaf tissue and chlorophyll synthesis. These amino acids help to increase chlorophyll concentration in the turf, leading to a higher degree of photosynthesis. This is the fundamental process of giving turf its health green and lush appearance.

Stomas are microscopic cellular structures on the leaf surface that help control moisture, nutrient (macro and micro), and the absorption of gases through the leaf surface. The opening of the stomas is controlled by both external factors (light, humidity, temperature) and internal influences (amino acids concentration, abscisic acid, etc.) The stomas are closed when light and humidity are low, or when temperature or salt concentrations are high. When stomas are



Hayden Field, Xavier University

closed photosynthesis and transpiration are reduced (low absorption of macro and micronutrients) and respiration is increased (carbohydrate destruction). Under these conditions, the balance of nutrient metabolism in the plant is negative, the result is retarded metabolism, meaning decreased plant growth. L-glutamic acid acts as a microscopic osmotic agent around the guard cells, which encourages the stoma to open, thereby facilitating better absorption of nutrients.

Function in the plant

In the turf plant, amino acids fulfill a wide variety of functions. Their common

role is to serve as building blocks of proteins which exert manifold functions in plant metabolism, and as metabolites and precursors they are involved in turf plant defense, vitamin nucleotide and hormone biosynthesis, and as a precursors of a huge variety of secondary compounds. One way or the other, as active catalysts or as precursors, amino acids are essentially involved in all metabolic, regulatory, and physiological aspects of turf plant metabolism.

We know from research that there are 20 amino acids that are considered for essential for proper turf grass development and proper turf grass function:

L-Tryptophan is a building block for auxin production in the turf plant allowing more effective production of this vital plant hormone.

L-Arginine aids in salt stress tolerance and root development enhancement.

L-Taurine aids in drought and saline stress tolerance.

L-Glycine is a natural chelator of positively charged nutrients acting to increase plant uptake of many micronutrients. It is also a positive stimulator of photosynthesis.

L-Proline, L-Leucine, L-Isoleucine, and L-Serine are osmotic protectants that execute operations within individual cells to maintain osmotic balance and proper cell functioning during stress. Important for increasing tolerance to drought, salt, and heat stress.

L-Lysine, L-Glutamic Acid, L-Alanine, and L-Proline are involved in chlorophyll production and increasing photosynthesis.

L-Histidine, L-Alanine, L-Methionine, and L-Proline are important for proper stomatal functions.

L-Aspartic Acid and L-Valine hasten seed germination.

L-Valine, L-Tyrosine, L-Threonine, L-Lysine, and L-Alanine increase turf plant tolerance to drought stress.

L-Phenylalanine aids in lignin production for stronger cell walls.

Why apply amino acids

Under ideal turf growing conditions the turf plant generates sufficient levels of amino acids. Respiration drives this process. Carbohydrates are transformed through many various reactions while nitrogen is added thus creating amino acids. Amino acids are then used by the plant to form proteins.

The problem we as turf managers face is that most turf situations these days *are not ideal conditions*. Athletic field turf is cut very closely, receives inappropriate traffic, and is abused in various intended or unintended ways. These factors, along with environmental stresses, limit photosynthesis and carbohydrate production, translating to reduced levels of proteins within the turf plant, and worse yet the overuse of stored carbohydrates. This can quickly place the turf plant on the threshold of disaster. At the same time, amino acids are excellent

food for microbial populations in that the soil will produce organic acids that are the main agent responsible for dissolving minerals from insoluble complexes

Amino acids have a chelating or complexing influence on micronutrients. When applied together with micronutrients, which sports turf managers often do, the absorption and translocation of micronutrients inside the plant is far more effective. In simple terms complexing or chelation makes the nutrients far more "recognizable" to the turf plant. In particular, L - Glycine & L - Glutamic Acid are known to be extremely efficient complexing/chelating agents.

The latest research has suggested that the additions of L-Amino Acids can help the turf manager better manage turf stress situations as a result of temperature stress, drought stress, heavy metal stress, low mowing heights, and traffic stress. There is even now evidence to suggest that the amino acid proline has the ability to

scavenge hydroxyl radicals by increasing superoxide dismutase (SOD), an important antioxidant enzyme. The enzyme Rubisco, which accounts for a major proportion content of C3 grass (cool season) tissues, is arguably the most important enzyme in carbon assimilation. An exogenous supply of amino acids has shown more carbon in the turf plant resulting in a greater ability to biosynthesize proteins and subsequent antioxidant enzymes such as superoxide dismutase during drought stress.

I have applied amino acids over the past 20 years using both granular and foliar forms as both a golf course superintendent and sports turf manager, and have seen their benefits first hand in helping manage and prevent the turf plant from the various stresses placed upon them from both a physical and environmental standpoint. *IST!*

Jeff Haag is turf specialist for Xavier University, Cincinnati, OH.

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THE *SPORTSTURF* INTERVIEW: JIMMY SIMPSON, CSFM

This month in “The *SportsTurf* Interview,” we meet Jimmy Simpson, CSFM, who works for the Town of Cary, NC with the title of “Facilities District Coordinator.” Jimmy is also Director-Parks & Recreation on the Sports Turf Managers Association Board of Directors.

SportsTurf: What are your main responsibilities?

Simpson: The main responsibilities of my position with the Town of Cary focus on the planning and implementation of a comprehensive maintenance and repair program for Town buildings, landscapes, parks, trails, and athletic surfaces. Our team is responsible for many of the Town facilities that have a general focus related to athletic surfaces. The facilities are WakeMed Soccer Park, USA Baseball National Training Complex, Mills Park Middle School, Middle Creek School Park, and the Town athletic surfaces.

ST: And what does a regular working week entail, if a “regular week” even exists?

Simpson: Our regular week at the Town of Cary is really based on the schedule of events that we receive weekly and the amount of support that we need to provide. We work a minimum standard 40 hour week all year, and during the busiest part of the season, anywhere from 50-70 hours a week. It seems that in this business our phones are always on and we are connected in some way around the clock, so is there really a regular week?

ST: How do you keep up-to-date reemerging technologies, best practices, etc?

Simpson: We are fortunate here to have North Carolina State University and their fantastic turf program right at our finger tips. We have a great relationship with that program and are able to participate in some of their research projects. The turf professors at the University continue to play a strong role in our ability to stay on the



The USA Baseball National Training Complex in Cary, NC. Photo credit: BrianFlemingPhotography.com

cutting edge as it relates to new turf varieties, chemicals, and maintenance techniques. Other groups such as the STMA, Turfgrass Council of North Carolina and the North Carolina /South Carolina Chapter of the STMA allow us as a Town to continue our education and create relationships with other turf managers. All of the groups listed above provide a forum where we have the freedom to share ideas, successes, and even an environment where we can continue to learn from our mistakes without worry of being judged.

ST: What advice would you give to someone looking to start their journey or what piece of advice do you wish someone had given you when you were starting out?

Simpson: The piece of advice that I like to give for someone just starting out is to set goals for yourself and work hard each day. Continually put yourself in a position to learn the necessary tools to help you

obtain your goals. Also, never be afraid to ask any question. The old adage that there is no bad question is 100% true. Meet as many people as you can and build a network of peers and supervisors that you can trust. This is a relatively small industry and if you work hard you can reach any goal that you set.

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

Simpson: In no certain order, the most obstacles that I hear about are overuse of the surface, dwindling budgets, professionalism, and hiring and retaining new team members. All of these issues are very important and are issues that face almost every member of our organization regardless of the location that they ply their trade in. These issues are all at the forefront of our discussions,

and I think as an association we are starting to work together to help bridge the gaps and turn these potentially negative situations into positive successes that we should all celebrate.

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

Simpson: My career has benefitted from the STMA in multiple ways. First and foremost, it has put me in contact with so many great people. The STMA has been, and continues to be a link to many resources that I have used throughout my career for problem solving when different situations arise with our surfaces. Ultimately, the STMA has provided, through the certification programs, a way for our team to showcase our professionalism and provided us an avenue for continued education, which I feel is paramount to professional growth and development.

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

Simpson: I think that our profession will continue to grow with more emphasis placed on what Sports Turf Managers are able to accomplish. Our industry is part of the service/entertainment industry, and as a result, I am continuing to see more and more successful Sports Turf Managers showcase the great work they do and highlight their teams for the extra effort. For so long, and I am very guilty of this, Sports Turf Managers wanted to be in the shadows. My saying was always, "I want the fan or athlete to enter the facility, look at the surface, say 'wow' and then forget about us."

Our association has been working with a public relations company to enhance the reputation and acknowledgement for Sports Turf Managers all over the country and internationally. The increased awareness from the public, the athletes, and our managers will only continue to grow as members take full credit for what their teams accomplish. I think that positive awareness is what will be the biggest change in Sports Turf in the next 10 years.

ST: How has social media impacted your work?

Simpson: Social media has really not impacted my work very much because I



Jimmy Simpson

may be the only person left without some sort of personal social media presence! I have been able to see the benefits of social

media from an idea sharing standpoint. Someday, I may actually join up on one of the social media sites, but it will most likely be awhile.

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

Simpson: My number one passion, both inside and outside of work, is my family. I enjoy spending afternoons at the pool or by the grill as well as many nights and weekends at the baseball or soccer fields with our two boys, Jack, 8, and Drew, 3. I coach my son's Little League team, which gives me the opportunity to share my love for the game of baseball with a new generation. I also enjoy a round or two of golf when I get the chance to get out. I am a devoted fan of the NC State Wolfpack, even though we have our struggles. Finally, even outside of work, I think most of us Sports Turf Managers can agree that we like to talk turf with anyone who will listen! **/ST/**



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Athletes' perspectives on improving a turfgrass sports field

// By CHASE STRAW, GERALD HENRY, PHD, AND JENNIFER THOMPSON, PHD

Recreational turfgrass sports fields are perhaps the most difficult to manage due to substantial usage, poor construction, and small management budgets. Unfortunately, the combination of these factors often results in low field quality during the playing season (which may be year-round). Disgruntled athletes may discuss imperfections in the fields and question why they can't be improved. Conversations between athletes may spread to parents or coaches, and then to upper management, until complaints ultimately reach the sports turf manager. At this point, the sports turf manager may ask him or herself a valid question: "Could these athletes manage the field any better?" The obvious answer is no. Sports turf managers are trained professionals at maintaining sports fields, whereas most athletes are not. However, athletes do have knowledge that can be valuable to you: the *user experience*. Understanding where management does/does not align with the user experience is essential to making sports fields meet realistic user needs.

Minimal research has been conducted to evaluate athletes' perspectives regarding the fields they play on. Qualitative research methods, such as interviews, can provide new insight into *how athletes think about* sports fields in ways that are not easily quantified. Unlike quantitative research, the objective is to develop a nuanced understanding of the experiences and opinions of a small number of athletes. This information could potentially bridge current knowledge gaps between sports turf managers and athletes, resulting in improved sports field quality and performance. Our objective for this article was to interview athletes on their home field to investigate what they believe influences field quality and the solutions for improvement.



Figure 1.

RESULTS SHOW THAT ATHLETES ARE AWARE OF POTENTIAL INFLUENCES ON FIELD QUALITY. ATHLETES WERE FAMILIAR WITH SEVERAL MANAGEMENT PRACTICES TO IMPROVE FIELD QUALITY, BUT DID NOT APPEAR TO FULLY UNDERSTAND HOW OR WHY THESE PRACTICES ARE IMPLEMENTED.

Athlete interviews

Twenty-five face-to-face interviews were conducted with athletes from the men's and women's rugby and ultimate Frisbee club sports teams at the University of Georgia (UGA). Interviews took place on a heavily used recreational

Tifway 419 hybrid bermudagrass field designated for all club sports teams at UGA (men's and women's lacrosse, rugby, soccer, and ultimate Frisbee [Figure 1]). Interviews were in the spring (April, 12 total) and fall (October and November, 13 total) 2016 academic

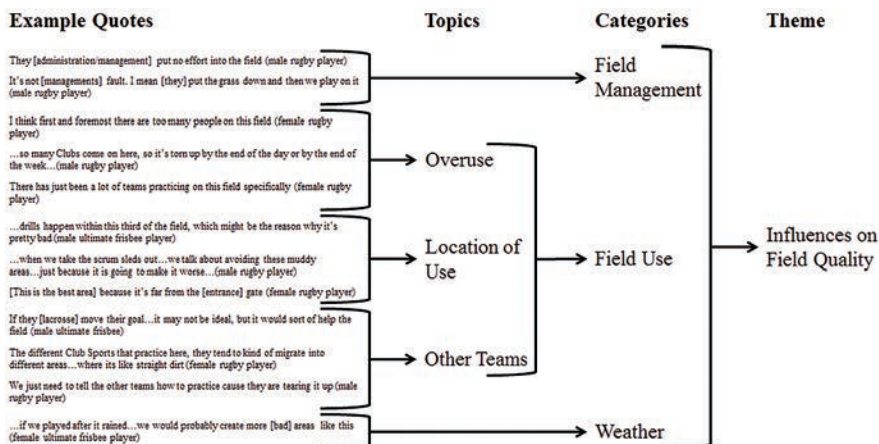


Figure 2.

semesters. Each interview consisted of asking several open-ended questions about that particular field. Here, we focus on the responses received from the questions “What do you believe influences the quality of the field?” and “What are solutions to improve field quality?”

The Institutional Review Board at UGA (a committee that oversees ethical standards in research with human subjects) approved the study before initiation and athletes gave their consent to participate. All interviews were audio recorded to ensure accuracy of responses. Audio recordings were transcribed verbatim and imported into the software ATLAS.ti for qualitative data analysis and eventually the creation of hierarchy diagrams. The analysis involved indexing data (the interview text) according to the topic expressed in the segment of text, then organizing the topics into categories (and if necessary, sub-categories) based on shared ideas.

Influences on field quality

Figure 2 displays the hierarchy diagram generated from athletes’ responses to the question “What do you believe influences field quality?” Columns moving left to right illustrate example quotes, topics, categories, and the primary theme generated from the question. Athletes’ perspectives regarding influences on field quality were broken down into three categories: field management, field use, and weather. Quotes regarding field management were mixed; athletes either had a negative or neutral impression.

Quotes about field use were further grouped into three topics. “Overuse” includes quotes concerning the quantity of people that use the field. Quotes relating to where field practice setup/drills or gameplay takes place are shown in the topic “location of use.” “Other teams” are quotes that put blame on other team participants. Specific blame was placed on teams that significantly deteriorate certain locations within the field (such as goalmouths). Lastly, the “weather” category has a quote explaining the influence weather may have if the field is played on following a rain event.

Solutions

Figure 3 is the hierarchy diagram generated from athletes’ responses to the question “What are solutions to improve field quality?” This hierarchy diagram is set up similar to the previous diagram. Columns moving left to right illustrate example quotes, topics, categories, and the primary theme generated from the question. Athletes’ perspectives regarding solutions to improve field quality were broken down into four categories. “Do nothing” represents suggestions that field managers can’t do anything to improve field quality. One athlete proposed improving field quality through allocation of money to field management alternatives (e.g., more space). The category of “field management” includes a plethora of topics focused on particular management applications and inputs, including aerification, fertilization, irrigation, seeding/sodding, and weed control.

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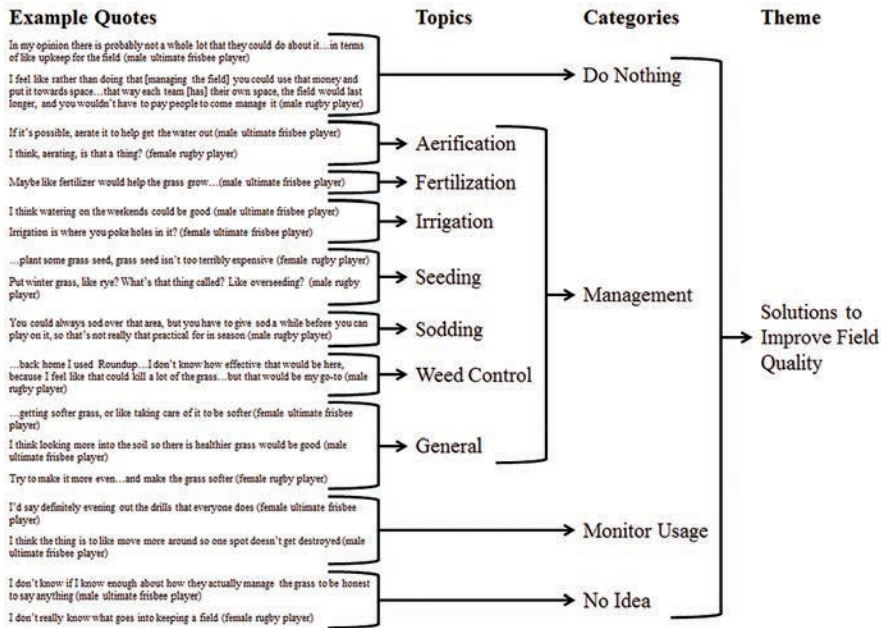


Figure 3.

Athletes' recommendations that practice drills and gameplay should be dispersed throughout the field are contained in the "monitor usage" category. Finally, the "no idea" category includes quotes from athletes who admittedly had no suggested solutions for improving field quality.

Results show that athletes are aware of potential influences on field quality. Athletes were familiar with several management practices to improve field quality, but did not appear to fully understand how or why these practices are implemented. Although some of these responses may be humorous to sports turf managers, we do not intend to poke fun at athletes, since they are not expected to be management experts. Rather, our findings highlight an opportunity for you to engage athletes around the rationale for implementing field management practices.

For example, how and why particular management practices are implemented, why they must be implemented at a specific time, how athletes should treat the field after implementation, and why these efforts may ultimately fall short of expectations. Greater transparency from field managers could improve athletes' understanding about what it takes to properly manage a sports field. As a result, athletes' perspectives about the field might change, leading to greater

acceptance of decisions to close fields or increased awareness about how to avoid causing unnecessary damage during field use (e.g., during practice).

One respondent to the 2017 *SportsTurf* magazine reader survey requested "more articles for the little guys" and "creative ways to succeed," particularly with minimal staff and a small budget. Building a stronger relationship with athletes that use your fields could be a starting point. As the turfgrass professional, you are in a position to educate others about the importance and impact of your work. Although we have focused on athletes, the same is true for improving relationships with coaches, parents, and/or administrators. Engaging them through better communication and transparency may be the best strategy for collaboratively maintaining and protecting the quality of your fields. *IST/*

Chase Straw is a graduate research assistant, University of Georgia, Athens; Gerald Henry, PhD, is an athletic association endowed professor at UGA; and Jennifer Thompson, PhD, is an assistant research scientist at UGA. This article highlights a small portion from the presentation, "Athlete perception and injury risk within natural turfgrass sports fields," scheduled for the upcoming 2018 STMA Conference in Fort Worth, TX.



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HISTORIC BOWMAN FIELD HOSTS MLB FOR LLWS

While so many eyes were watching central Pennsylvania in mid-August during the Little League World Series at the same time, north of Lamade Stadium, across the Susquehanna River in Williamsport, Major League Baseball played a game at historic Bowman Field.

Officially named BB&T Ballpark at Historic Bowman Field, it hosted the MLB Little League Classic between the Pittsburgh Pirates and the St. Louis Cardinals August 20 and is the home of the Williamsport Crosscutters of the New York-Penn League.

The 16 teams participating in the Little League World Series and their families were guests at the game. Another 500 tickets were distributed via lottery.

In preparation for the game, Bowman Field, which seats 2,500, underwent a \$4 million facelift this spring that included new seats, relocated dugouts and bullpens, new drainage and irrigation systems, upgraded safety netting and a new playing surface.

Murray Cook, president of the Sports Turf division for BrightView, the design, installation, and maintenance company, is usually involved in this kind of project for MLB, and he answered some questions:

SportsTurf: How many fields have you prepped for MLB now, and in how many countries?

Cook: I've really never broken it down like that before. My kids bought me a world map years ago that allows you to stick pins into places you've traveled. Like the USA, many countries have states, for example Mexico has 31 states and I've worked in 20 of those states. As far as individual countries, it looks like I've raked my way across almost

60 countries for MLB, *World Baseball Softball Confederation*, International Baseball Federation, etc., (including countries that are not countries anymore like the USSR.)

ST: Are the problems you need to correct usually the same or different in every situation?

Cook: It really varies. Field dimensions are still an issue in a lot of places but what's great is that I am seeing great strides toward field safety and overall turf management

practices. There has been an increase in awareness through educational clinics and seminars around the world so the condition of sports fields continues to improve.

ST: If you could snap your fingers and have one problem most baseball groundskeepers face instantly disappear, what would that problem be?

Cook: My first thought was the weather. Too hot, too rainy, too many tarp pulls; everyone has to deal with weather



and if you could snap that away or snap it to you that would be pretty cool, but I personally would settle for snapping up some more family time.

ST: What were the major hurdles to clear in getting historic Bowman Field up to standards?

Cook: Bowman Field is an old ballpark with a lot of unique qualities. It's a much different set of challenges than the MLB/Fort Bragg built out last year. First, technically, Bowman has not had a head groundskeeper or sports turf manager in years. The Williamsport Crosscutters short season club kind of managed the field with city help and part time folks. The field had a pretty good size crown and very little under drainage, so it had to be taken out. Designing an old field to meet existing stadium dugouts and fence lines can be very challenging but our Brightview designer and construction teams had some great ideas, and we figured out how to make it work with the existing conditions.

The ballpark also required some new fencing, padding, foul poles, bullpens, batters eye, backstop and light upgrades. The City also upgraded the seating bowl and the dugouts. Many of the improvements for the MLB game have and will be taking place during the Crosscutters' season. We began the field renovation late winter so we had to hurdle some weather bumps. The old field was totally removed and a new field with full drainage and rootzone, warning track and irrigation was installed, covered with a bluegrass blend from Tuckahoe

(Farms in New Jersey). After construction ended in June, we staffed the maintenance operations with seasoned veterans Isaiah Lienau and Kevin Moses, who have done an outstanding job keeping the field in MLB condition during the Crosscutters' season.

Kevin Moses

ST: What are your job responsibilities at BrightView? What specific tasks at Bowman Field are/were you involved in?

Moses: My job title is Account Manager. I have a wide array of job responsibilities but my main duties consist of overseeing our sports turf maintenance accounts and



Kevin Moses

helping manage our sports turf projects. At Bowman Field, the BrightView Sports Turf team and I served in a project management and quality control role during the construction phase. Isaiah Lienau, BrightView Operations Manager,

and I also constructed the mound, home plate, and bullpen areas and took over management of the field once construction was complete. We were responsible for the grow-in and for bringing the field to a game ready status for the CrossCutters' season, which started mid-June. I also worked with vendors and sponsors on acquiring the necessary equipment and materials needed for the season.

ST: What was your previous job?

Moses: Prior to the Williamsport project I was busy this winter and spring with the World Baseball Classic tournament. I spent time in Seoul, South Korea, and Jalisco, Mexico, performing field renovations in preparation for the tournament and I managed the grounds crew for Round 1 play in Jalisco.

ST: Are you on the road most of the time? And if so, what are the joys and pains of that lifestyle?

Moses: Yes, I travel frequently in my current role. One thing I like about the travel aspect is that I am able to meet a lot of great people in the sports turf industry and see the challenges that turf managers face both in the USA and internationally. The downside of travel is obviously being away from my wife, Elizabeth, and my two children.

ST: What was the biggest challenge to overcome in preparing Bowman Field for MLB? I heard the field has no dedicated groundskeeper, how were playing conditions when you first saw it?

Moses: As is typical with any project, I would say the weather was the biggest challenge during the construction phase. Williamsport received a lot of rain this spring, which made it challenging during the early phases when working with the subsoils. The other challenge was managing the Kentucky bluegrass through the summer, considering sod was laid at the end of May.

ST: Where will you be when the Pirates and Cardinals play? If not, where will you be?

Moses: I will be working the game on August 20. I will be on-site in Williamsport starting on August 14 and will spend the week there working with our crew getting the field dialed in for the Pirates and Cardinals. **/ST/**

SNOW REMOVAL EQUIPMENT MAINTENANCE TIPS



Editor's note: Thanks to Husqvarna for providing these guidelines:

It's very common to neglect snow removal equipment during the spring and summer months, but once that first snow fall hits you'll be wondering why you didn't prepare sooner. Long and cold winters can create time-consuming, hard work and you won't want to be left out in the cold with malfunctioning equipment because it wasn't properly stored and maintained during the non-winter months.

Here are a few maintenance tips from Husqvarna professional Giovanni Crespi, Director of Regional Product Management, to do before this winter hits to ensure your snow removal equipment stays clean and ready-to-use to tackle any snow that may come your way:

Freshen up the fuel.

Gasoline left in the equipment gets stale over time and leaves harmful deposits in your machine that can cause damage to the engine. To avoid engine damage, it's a good idea to add a fuel stabilizer.

Change the spark plug.

A spark plug in good condition will make starting your equipment easier. Switching out your spark plug each winter will help ignite the fuel air mixture within the engine so you don't end up stuck out in the snow. It's important to replace this plug every season, so if you haven't done so already, it's a good idea to go ahead and replace it before this coming winter.

Wash up.

To ensure your snow removal equipment is in safe working order, it is important to periodically wipe away any dirt or grime on your equipment. Leaving a buildup of dirt and grime during the fall, spring and summer months will impede your equipment's performance come winter. Apply a degreaser spray to all areas showing buildup and let it sit for 15 minutes. This will allow you to easily wipe away all dirt and grime.

Check tire pressure.

Properly inflated tires will increase your machines maneuverability, making it

easier to tackle any type of snow you need to clear.

Tighten.

Screws and bolts can loosen during run time, so it's important to check that all screws and bolts are properly tightened across your equipment at the start of each winter.

Lubricate.

Be sure to lubricate wheels and other bearings on your equipment periodically to ensure that all parts of your snow removal equipment are operating safely and efficiently.

Inspect the electrical system.

To keep your equipment operating at its best, you'll need to make sure the electrical system is in proper working order. Make sure all electrical connections and battery terminals are tightened and free of any corrosion. Then look over the machine to make sure there aren't any wires or sharp objects touching any engine parts that get hot while the machine is operating.



Toro introduces power broom attachment

Adding to the versatility of the Toro GrandStand MULTI FORCE stand-on mower, a power broom attachment for multi-season use is now available. The power broom is designed for clearing snow off sidewalks and driveways, as well as clearing debris or dethatching grass. The 55-inch-wide power broom attachment is perfect for clearing snow down to the pavement, especially for properties that require zero snow accumulation. The power broom is the latest addition to the line of MULTI FORCE attachments, which includes a 5-foot BOSS snowplow and an EZ-VAC Powered Bagger. The GrandStand MULTI FORCE product line features two models that come standard with the TURBO FORCE cutting deck, as well as a snow-only model without the cutting deck. All models feature a powerful Kohler Command PRO EFI engine as well as a pump and wheel motor transmission. The machine is also equipped with a Power Arm with a 2-inch-square receiver for connecting attachments.

The Toro Company



Husqvarna ST 230P snow blower

Developed for those who need a high-performing snow thrower with the

capacity to clear large driveways and paths, Husqvarna's ST 230P Snow Blower is ideal for medium duty and occasional use in all snow conditions. Adjustable skid shoes allow the machine to work on any surface type, while power steering and extra large tires allow smooth operation. Powered by an exclusive Husqvarna engine, engines are backed by an industry-leading warranty, the Husqvarna 5&5 Exclusive Guarantee with a 5-year limited engine warranty and Guaranteed to Start warranty. Other features include LED headlights, electric starter and 30-inch working width. Comfort and convenience in the 200 series are a result of an improved ergonomic design, industry-exclusive adjustable handle with heated grips, an efficient two-stage system for high throwing capacity and a multi-function dashboard.

Husqvarna



Cub Cadet 3X PRO 3-stage snow thrower

The Cub Cadet 3X PRO uses a patented 3-stage system to plow through snow up to 50 percent faster than a traditional Cub Cadet 2X 2-stage snow thrower. This 3X PRO power is boosted by a larger, 14-inch induction accelerator to break up packed snow and ice, plus heavier 12-gauge steel side panels, sealed ball bearings for added durability and an optional hydrostatic transmission. The 3X easily cuts through 18 inches of heavy, wet snow, including that annoying wall of winter the snowplow leaves at the end of the driveway. Trigger-controlled power steering at your fingertips for unmatched control, effortless maneuverability and one-hand operation.

Big snow days will not hold Cub Cadet 3X PRO operators back this winter. The patent-pending 3-stage system works by first gathering snow, ice and slush, and moving it toward the center.

Cub Cadet



Deere snow utility V-blade attachments

This winter, skid steers, compact track loaders or compact wheel loaders are capable of tackling even more projects on the job site with the John Deere Snow Utility V-Blades. These attachments provide multifunctional versatility and are ideal for customers removing snow or performing light dirt work on the road. The three new models (BV6, BV8 and BV9) offer increased flexibility, performance and productivity. Delivering four hydraulic angling positions: straight for making larger cuts, V-configuration for pushing through hard-pack, scoop (both sides inward) for easy snow stacking and 30-degree right or left positioning for accurately moving snow or dirt, the Snow Utility V-Blades offer a variety of standard features to properly and efficiently tackle snow or light-dirt projects on the job site. The blades feature an electrohydraulic (EH) valve for independent blade function that operators can control from the cab.

John Deere

KIOTI's new rear mount snow blower

While many are just getting a taste of the warm summer weather, Kioti Tractor is



gearing operators up for winter with high-performance, durable tractor implements. Thanks to a recent partnership with Woods Equipment, KIOTI Tractor is preparing to power through winter with a variety of front and rear mount snow blowers. Specifically, the SB4096 offers extreme blowing power thanks to its 200-degree hydraulic chute rotation. The 96-inch snow blower's fan has a depth of nine inches and a diameter of 33 inches. The dual-row SB4096 weighs in at 1,420 pounds and operates through a high tractor PTO range of 80-150 hp and PTO speed of 540 or 1,000 rpm. KIOTI is excited for operators to clear the way and put this implement to the rugged test this winter.

KIOTI



TRAILBLAZER UTV V-plow

The TRAILBLAZER UTV V-plow is a 6-foot-wide, high-performance snowplow that adjusts to 5 feet when fully angled, in scoop or V mode, to fit sidewalks and pass through gates. Double-acting 1-inch angle cylinders allow users to operate each wing independently or lock them together for

efficient straight-blade operation and clean back dragging. The Trailblazer comes standard with 5-inch steel cutting edges and a scrape lock feature to help provide a clean scrape. Other features include dual trip-edge design, fully enclosed hydraulics, UTV-specific handheld control or joystick option for easy control when wearing gloves, 2 width settings that cover the track width on a wide range of utility vehicles, and easy-on/off operation with removable receiver brackets.

Fisher Engineering



Honda snow removal

Designed with an emphasis on quality, reliability, and ease of use, Honda HSS928 and HSS1332 two-stage snow blower models are powered by high-torque Honda 270cc GX270 OHV engines. HSS928 snow blowers are intended for aggressive snow clearing and available in both wheel-driven and dual-track, self-propelled models. The innovative design enables a 28-inch clearing width, a discharge distance of up to 52 feet and a clearing capacity of up to 1,900 pounds of snow per minute. Honda HSS928 snow blowers also offer a choice of manual or electric starting. Even greater capability in a walk-behind machine is found in the Honda HSS1332, capable of clearing a 32-inch swath with its commercial grade 390cc GX390 Honda four-

stroke engine. The track-driven HSS1332 can move up to 2,750 pounds per minute at a discharge distance of up to 56 feet.

Honda



Ariens Professional Sno-Thro series

The Ariens Professional Sno-Thro Series is built for facility/maintenance managers and homeowners who want to easily and quickly clear pathways and sidewalks after a storm and need a powerful, reliable snow blower for the job. Features like dash-controlled hand warmers, electric start, drift cutters and 1-hand interlock come standard on all Professional models. The Professional models are available with 3 housing widths (28, 32 or 36 inches) and a Hydro-Gear hydrostatic transmission (Disc-O-Matic transmission is also available on the 28- and 32-inch housings). All models are built with an Ariens Polar Force 420-cc engine (Briggs & Stratton), which is powerful enough to start in temperatures as low as 20 degrees.

Ariens Company



New V-MAXX G2 hopper spreaders

Equipped with updated controls and enhanced material spreading features, the

new SnowEx V-Maxx G2 hopper spreaders offer greater performance and operating efficiency for contractors and municipalities on large ice control applications. A new dual variable-speed control is more compact than on previous models. This digital, self-diagnosing unit allows independent adjustment of spinner and auger speeds, while convenient buttons offer easy control of the standard vibrator and optional accessories. It includes an auto reverse function to easily clear auger jams. The control only requires a single 4-pin wire to enter the cab, making it less obtrusive and providing more location options when mounting. The V-Maxx G2 lineup includes eight different V-box models, ranging in capacity from 1.5 to 6.0 cubic yards. Designed for use with full-size pickups, flatbed trucks or dump-bed trucks, each spreader has a material hopper that helps provide a continuous flow of material to auger drive.

SnowEx



Hiniker introduces new skid steer snow pushers

Hiniker Company recently introduced its new 3600 Series Skid Steer Snow Pushers. The snow pushers are available in 96- and 120-inch widths and feature a durable rubber cutting edge that provides superior cleaning on paved surfaces. With 36-inch tall by 36-inch deep sides, the box-type snow pusher offers plenty of snow moving capacity. 3/8-inch steel construction side plates provide strength and durability, while heavy duty steel skids allow for floatation over uneven surfaces. A universal skid-steer attachment system makes connecting the snow pusher quick and easy. An optional pull-back attachment provides a second rubber cutting edge for back dragging operations.

Hiniker Company



Snowplow halogen headlamps

Western Products has announced all-new NIGHTHAWK halogen headlamps for its full line of truck snowplows. Designed for increased visibility and safety, these new headlamps are 36% brighter and offer a 35% increase in high-beam distance compared to previous headlamps. The improved NIGHTHAWK headlamps are also engineered to withstand the toughest weather conditions. Features like an improved seal and GORE-TEX® patch-protected vent help keep moisture out of the casing to maintain high performance and durability, season after season. "It's no secret that snowplow drivers do most of their work in the middle of the night," said Doug Clark, Product Manager of Western Products. "We upgraded the performance, durability and even the look of our headlamps to help increase visibility, safety and quality of work for those out getting the job done. Plus, they look great."

Western Products



Snow blowers for skid steers, tractors

Loftness' line of snow blowers accommodates many makes and models of skid steers and tractors. Each unit is built with heavy-duty construction for maximum reliability and high performance.

Skid steer snow blowers are offered for a wide variety of flow rates, starting as low as 15 gpm. Seven models are available in 72- to 84-inch widths. They come with a universal coupler, a single motor design and an electric spout rotator. A total of 11 rear-mount, PTO-driven tractor models are also offered with one-, two- or three-auger configurations. Available in 60- to 108-inch widths, they accommodate tractors with 540- or 1,000-RPM PTO drives and 16- to 200-PTO horsepower. The units feature two-stage designs for highly efficient operation. All components feature heavy-duty construction, including the auger, impeller, spout, gearbox and chain drive. Other standard features include adjustable skid shoes, reinforced body braces and shear bolt protection.

Loftness



New options for Liqui Maxx spray system

The SnowEx Liqui Maxx spray system has been enhanced for greater durability, performance and user friendliness, and now offers an electric start for the gas-powered deluxe model. Available with multiple tank sizes to fit a wide array of vehicles, the purpose-built Liqui Maxx system provides exceptional versatility for commercial anti-icing and deicing applications. The customizable modular design of the Liqui Maxx allows snow and ice professionals to select their desired tank and pump platforms to fit their specific needs. The Liqui Maxx is available in tank sizes of 300, 500, 750 and 1,250 gallons. The elliptical polyethylene tank design provides a low center of gravity and includes a sump for complete draining. A filtered bottom-fill port can handle all brine solutions.

SnowEx



Erick Landis, Director of Turf for Sporting KC

Irrigation technology at new national soccer facility in KC

Construction continues in Kansas City of the new US National Training and Coaching Development Center (NTCDC) and Sporting KC's new MLS practice facility. NTCDC fulfills a vision shared by Sporting Club, US Soccer and Children's Mercy to build a first-class environment to develop elite players, coaches and referees of all ages. The facility will be the training home of Sporting Kansas City, and it will also accommodate the Children's Mercy Sports Medicine and Rehabilitation Center as well as the US Soccer National Coaching Education Center.

Erick Landis, Director of Turf for Sporting KC, answered some questions about the new facility in August:

Why was Kansas City chosen for this new national training facility? Our ownership group is very fond of the game. Their goals aren't just to win an MLS Cup; they want to win the World Cup for the US. That starts from within; development and training and providing a state of the art facility for our US teams and coaches to accompany that. This facility will have a "Superpitch" (three full-size soccer fields side by side), two artificial practice fields, and a FIFA-regulation sand soccer pitch.

David Ficklin, our VP of Development, has done a great job with this place. He has involved me heavily on field construction decisions and it's technology.

Are the fields newly built? What are details regarding why a certain grass variety, rootzone, drainage system, etc., was chosen? The NTC Superpitch totals 7 acres with a rootzone that is a 9 inches of 90/10 mix with reed sedge peat, built with good drainage. The turfgrass is a sprigged Northbridge bermudagrass base with an HGT bluegrass overseed, aka "bluemuda." The fields are growing rapidly [as of Aug 15]. We used a "sod to sprig" method. This is, in my opinion, a faster way to sprig. Instead of transporting the sprigs that start composting in the truck, the sod is delivered and essentially diced up in the machine and spread/crimped in, on site. I believe the plant is less stressed and establishes faster than the normal sprigging process.

Why bluemuda? Our cold tolerant bermudas are now being grown more and more North, and warm tolerant bluegrasses are extending farther South. Kansas City is a prime market to have these grasses grow symbiotically with each other. Both growing with rhizomes to fill-in areas should help eliminate more overseeding.

As this Superpitch will mainly serve as Sporting's first team training facility, I wanted to replicate the stadium as best as I could to give as much consistency as possible for the players. We also have re-built a training field at Swope Park with a Northbridge bermuda

and will use the same maintenance practices as the new fields and stadium up there. This is so now our USL and academy teams will also be getting the same field as the stadium. And, if our team wants to ever use the Swope Park training facility, they can.

What are the features and benefits of the new irrigation system? For irrigation we have a Toro Lynx control, remote gateway 2-way decoder system with hdpe piping. The sprinklers are INFINITY 35 heads, with built-in valves and a stealth turf cup. That probably sounds like a different language to most. I did research on many professional sports fields and it seems everyone is essentially using the same block valve system where each valve controls five or six heads and hardly any have individual control.

This controller is a computer system program that lets you have complete control of your watering schedule and each head individually. The 2-way decoder system will save on copper cost for wire and is a much easier install for the irrigation company. This eliminates taking a single wire from the gateway to each head. They can be spliced congruently from one head to the next.

When the system is running the whole field is turned on "electrically" but tells a single decoder to actually run. The remote gateway is a great tool that connects the field to the computer by radio (without wires). Looking to the future, if we ever wanted to update the stadium field on the same system, we could just add a remote gateway and use the same computer. We have 120 individual sprinkler heads (40 per field) on the Superpitch. Each has an individual valve that is electrically controlled by the 2-way wire. This allows each head to be run individually. So when I see one dry spot on the field, I can water that one dry spot and not have to turn on six other heads.

The majority of stadium fields have smaller sprinkler heads (1-inch diameter) on a grid system throughout the field. This is for player safety so that no one will trip in these smaller holes where the sprinklers are located on the field. We have eliminated this by burying the heads 2 inches down in the rootzone and adding a "stealth cap" turf cup on top. This turf cup is put on top of the riser of the head, and is walled with a thin silicone shell that will give to a player foot or divot. This allows us to grow turf with 2 inches of soil inside and let it root eliminating the normal "hole" of a sprinkler head.

How much activity is expected as far as events, including matches and practices? We have a built a 12-field youth soccer complex located close to the NTCDC. The Wyandotte Sporting Fields have eight artificial fields and four with natural grass and native soil. These fields will be on a majority organic-based fertilizer program. While looking for irrigation systems for these fields, we found a Canadian based company called InteliRain. Calgary is strict on water usage, and this is why the system was created, to save water consumption. After spending a couple days seeing the system live, I started debating my normal thinking of irrigation. Instead of adjusting the head on the head, the computer controls it and a magnet on the head knowing which degree it is spraying. Also, being able to adjust its throw length to each degree eliminates the need for overlapping. With this system we will be able to water in squares, or whatever shape is necessary. This is possible because

of a pressure regulating valve that works congruently with head and computer.

When adjusting psi coming out of the nozzle I was concerned about droplet size. A nozzle has been created that expands and contracts to adjust with amount of pressure and flow coming out head to give the correct droplet size. These sprinklers have a Wind Shift technology from InteliRain and are able to adjust up to 15% psi depending on wind direction and speed. Again, this system is giving me complete control. For example, if I want to re-seed or re-sod a 6-yard box, I can set a program with the closest two heads to just water the 6-yard box, while at night continuing its normal throw for the entire field.

Another project that I am very excited about is at the two new facilities we are seeding and maintaining about 40 acres of native plants of Kansas and Missouri. I have joined the Native Plant Initiative of Kansas City to learn more about the importance of having the native plants and make valuable connections with extremely knowledgeable people for maintenance of these areas. Once established I plan on building walking/jogging paths for the players, coaches, and parents at the NTC and WSF.

I would like to thank my team: Casey Montgomery, Alex Peters, Jeff Lenihan, Josh Tvrdik, Spencer King, Joe Robertson, and my two summer interns, Alexander Lutz and Jackson Kramer. I see bright futures for the entire crew. Thanks also to Cam Cote from InteliRain, Jason Kanak, David Ficklin, and the Sporting Kansas City ownership. *IST/*



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► FIELD

SPARTAN STADIUM

MICHIGAN STATE UNIVERSITY

► LOCATION

East Lansing, MI

- **Category of Submission:** College Football
- **Sports Turf Manager:** Amy Fouty, CSFM
- **Title:** Athletic Turf Manager
- **Education:** BA Psychology, 2-year Sports and Commercial Turf Management Certificate
- **Experience:** I began working in the turfgrass industry 25 years ago pursuing a career in the golf industry. I have since spent the past 17 years managing athletic fields at the Division 1 level. I am currently in my twelfth season and responsible for the Spartan Stadium field level, the football practice complex, baseball, soccer, softball facilities, practice golf facility and new athletic field construction for the athletic department at Michigan State University. I also assist with outdoor facility management and outdoor event management.
- **Full-time staff:** Andy Flynn, groundskeeper, football. Andy has been working in athletics for 10 seasons in the football facilities area. His primary responsibilities are to take care of the Spartan Stadium field level, practice football complex, and indoor practice football building. He is the only dedicated staff to football facilities.
- **Additional staff:** Jared Knoodle, groundskeeper, and Ian Bumpus, groundskeeper, assist with game week prep and as

needed. Dale Reif & Jim Bartolacci are our seasonal mowing crew, and turf management interns included Jerold Pell and Kirk Thomas.

- **Volunteers:** 2016 game days: Andrew Christesen, Joe Clark, Andrew Brandt, Brian McDougal, Andrew Miller & Shayne Schario.
- **Original construction:** 1923
- **Rootzone:** 90% Sand, 5% silt, 5% clay
- **Turfgrass Varieties:** Kentucky bluegrass: P105, Midnight, Bewitched, Langara
- **Overseed:** We overseed 200 lbs. P105 and Bewitched prior to our first springtime core cultivation. Additionally, we oversee 50 lbs. of those same varieties before each home game during the growing season.
- **Drainage:** No system

Why STMA should consider your field a winner?

Andy Flynn, CSFM, wrote:

We feel that Spartan Stadium should be considered a winner for three reasons: pride, professionalism, and excellence. We understand that there are many college football fields across the country that all deserve this award, but what we feel sets us apart is our pursuit to be one of the best.

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.



JOHN MASCARO'S PHOTO QUIZ

JOHN MASCARO IS PRESIDENT OF TURF-TEC INTERNATIONAL



ANSWERS FROM PAGE 17



This photo comes from the STMA's Historical Collection of slides; the STMA Historical Preservation Committee is actively identifying images for preservation. The late Dr. Kent Kurtz, STMA's first Executive Director and unofficial historian, took this photo back in the 1970s. This image is a perfect example of how far we have come as a profession through STMA in the pursuit of knowledge for better and safer sports turf fields and playing conditions. The reason why the lined areas are dead on this municipal recreational athletic field is because they were "burned" out by spraying some type of grass killing agent onto the turf and saturating the soil to prevent the need for repainting. As you can see from the photo, this method was quite effective for keeping the lines in the turf visible but it also created an unsafe dip in the bermudagrass field where players could trip, twist or even break an ankle. Back before we had the knowledge base we now have about safety, things like powdered lime, gasoline,



various weed killers and even diesel fuel were sprayed on lined areas on athletic fields to prevent the turf in these area from growing. As time progressed, glyphosate was also added to this list of ways to prevent turf from growing and obscuring the lines. Today, we realize that safety and sustainability comes before convenience.

Photo courtesy of the STMA Historical Preservation collection; photo credit to my longtime friend, Dr. Kent Kurtz.

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.

STMA SOURCEBOOK

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The OFFICIAL online directory:

STMA Sourcebook is an online directory of manufacturers and distributors of equipment and supplies of professional sports turf maintenance professionals, irrigation contractors, sports turf managers, professional grounds managers, custom chemical applicators, and other green industry professionals.



Winning this award is not just for our staff and our operation. It's for the pride we have in being an agricultural college and having one of the best turf programs in the country. It's for an athletic department that wants nothing more than our student athletes to succeed. It's for all the staff, past and present, whose dedication and sacrifice have helped us achieve our goals.

We have a staff made up of three CSFMs. Our dedication to professionalism is something we strive for every day. Whether we take the time to speak at a conference, give a presentation to a turf class, or even just talking to the casual football fan on a game day, we always pay mind to the goal of advancing the professionalism of our industry in a positive way.

We never get tired of visiting teams coming on to our field and asking the question "is that real grass?" We love when the officials come out on the field and talk about how nice the surface is. We love a good rainstorm during a game and seeing the field play just as good as it would on a sunny day. We love when there are obstacles to our game week preparations and we are able to overcome and still provide the same level of perfection. The excellence we strive for every day always shows, rain or shine, win or lose, we consistently provide the highest level playing surface we possibly can.

Spartan Stadium is so much more than just a football field. It's a symbol for this university. It's a platform for our student athletes. It's an opportunity for our future turf professionals. It's a way to promote our profession. It's an example of what teamwork and collaboration can accomplish. We feel that it is time for Spartan Stadium to once again be recognized as one of the best.

SportsTurf: *Can you take us through the changes that have happened to the turf since natural grass was re-installed in 2002? Is the original module system still in place, or have there been major overhauls or re-sodding?*

FOUTY: None of the modules have been moved since its installation in 2002. We have sodded the field one time, in 2011 following the U2 concert in Spartan Stadium, otherwise we regenerate the field each year from seed. The maintenance program has basically be the same since the 2004 season. The improvements in technology for turfgrass management have greatly increased the amount of information for us to base our decisions on in the care and management of the field. We use less water to irrigate based on soil moisture content, can determine best moisture content for game days and playability, and maximize our applications bases on air and soil temperature [see our July 2017 issue page 8]. This has been the only major difference in management of the field.

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

FOUTY: No one is successful alone.

ST: *What are your specific job responsibilities?*

FOUTY: Our area is responsible for maintaining all the outdoor athletic fields for the Athletic Department here at MSU. This includes a grass practice football field, an artificial practice football field, a stadium football field, a practice soccer field, a

SPARTAN STADIUM





soccer game field, a softball field, the golf practice facility, and a baseball stadium. In addition to this we maintain the hitting and pitching building, indoor practice football facility, indoor golf practice area, and various general grounds and landscaping in and around these areas. We are also involved in projects as assigned related to outdoor facilities, which could be anything from field renovation, facility renovations, special event planning, and concert preparation and planning.

ST: *What do find most enjoyable?*

FOUTY: A few things, I really enjoy the challenges associated with the science of turfgrass management, art or field maintenance, and weather variability in the pursuit of the perfect athletic field. No two days are ever the same. Second, working in turf there are so many people and relationships you build over the years. I have been fortunate to befriend and be mentored by many sports field managers that I have met as a member of the Sports Turf Managers Association.

ST: *What task is most challenging about your job?*

FOUTY: The weather hands down. A week of football game preparation in East Lansing without weather challenges is rare. We do our best to prepare the field so playing conditions are as consistent as possible for our student athletes from game day to game day.

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

FOUTY: When we have time, we have a Facebook page for MSU athletic field operations where we post pics of different things we are doing to the fields and pictures of the facility. The rest is handled by the external relations area of our department.

ST: *What are you doing in terms of environmental stewardship?*

FOUTY: Being a historically rooted agricultural university and the first land grant institution in the country, we are always mindful of being good stewards of the environment. We are always looking to be as environmentally conscious in the things we do as possible. As sports field managers we are stewards of the environment and our facilities. */ST/*



Case study: drainage for athletic field

Editor's note: This case study provided by NDS.

When the Clarington Tiger-Cats, a minor league professional football team in Ontario, Canada, began planning construction of a new athletic field, landscape architects needed to identify a drainage approach that would work for a space that was heavily and continuously used.

A tile drain would typically be specified for this type of project, but to install tile drains, gravel must be delivered, stockpiled, and moved around the construction site, which is not ideal for a playing surface because of subgrade compaction. It also can require more labor and equipment costs.

Architects also considered using a vertical strip drain system, but this method requires a significant amount of sand backfill, which can have differential settlement issues. This would entail future maintenance costs, which were a key concern for project planners.

An NDS EZflow Drainage System was selected because it requires no gravel. It consists of three or four slotted corrugated pipes surrounded by NDS poly-rock, a lightweight gravel substitute, all wrapped in a geotextile fabric. These pipes can be covered with native soil instead of sand. Native soil will recuperate faster than



NDS EZflow Drainage System

sand, and it can take more of a beating from heavy use. Also, EZflow allows the reduction of slope around the field.

For the Tiger-Cats' project, landscape architects leveled the subgrade 1 degree, then excavated 12-inch deep, 16-inch wide trenches in a herringbone pattern. The pipe was then placed in the trench, covered with geotextile paper, and then topped with

screened native topsoil. Approximately 5,200 linear feet of product was installed, and project planners estimated an overall cost savings of 25% compared with traditional gravel and pipe. One measure of the project's success is how well it handles the freeze/thaw cycle in Canada; the product has performed well and there have been no settlement issues.



Research on products to relieve heat, drought stress

Editor's note: This information provided by Brookside Agra.

Dr. Cale A. Bigelow, associate professor of agronomy-turfgrass science, conducted Purdue University turf treatment studies from late May 2013 to early August 2013. The study area consisted of a sand-based

rootzone conforming to USGA rootzone specifications and a mature strand of creeping Bentgrass. The turf was maintained according to typical, moderate putting green management practices for the region and fertilizer, insecticides and fungicides were applied on an as-needed basis.

The turf treatment studies compared the use of H2OExcel and a competitor's

product, as well as the untreated control at various application rates and timings/frequencies. The plots were assessed for overall visual turf grass quality, wilted/brown turf and turf injury. Canopy greenness by reflectance was also measured and the values were presented in a color index value.

The research concluded that turf treated with both products displayed

significantly less wilt and healthier visual/turf quality compared to the untreated control turf. However, the H2OExcel results were accomplished using 86% less product than the chemical-based competitor to achieve virtually the same outcome.

The recent summer heat wave has propelled daytime temperatures across much of the country to an excess of 100 degrees. As a result, cool-season turfgrasses such as Kentucky bluegrass, perennial ryegrass and fine leaf fescue have gone dormant and turned brown from stress. Some turf managers continue to excessively water and fertilize their grasses, only to see them continue to turn brown and succumb to weeds during the summer months.

Brookside Agra has developed the proprietary, natural water conservation agent, that this research showed can improve the health and appearance of turfgrass when heat and drought conditions are high, using 30% to 50% less water.

“Water will always take the path of least resistance and simply run-off. This common occurrence leads to the over-watering and fertilization of plants, crops and yards because water cannot reach the root system,” said Tony Arro, Brookside Agra Director of Sales - Specialty Products. “The power of H2OExcel’s long-term use is that it creates a soil profile that allows oxygen and water to naturally penetrate the surface, thus allowing fertilizers and nutrients a more efficient path to the root zone.”

The product is a 100% biodegradable, proprietary blend of desert plant extracts; high-quality, humic acid-containing biologicals; and other all-natural, non-plant derived nutrient enhancers. H2OExcel can change the polarity of water and soil to increase biological activity, interact with soil capillarity pressure and defend against dehydration of both the soil and plants by keeping water available deeper within the soil profile. It also helps to increase available nutrients and balance the amount of water within the root zone of growing plants by supercharging biological activity.

For more information about the 2013 Purdue University Turf Study, visit brookside-agra.com/2013-purdue-university-turf-study/.

Alliance for Low Input Sustainable Turf approves varieties

The Alliance for Low Input Sustainable Turf (A-LIST) has approved a number of new varieties for 2017. To insure the integrity and independence of the program, testing is conducted by nationally recognized cooperators, selected on a regional basis to include environmental adaptability. These cooperators also participate on an Advisory Committee to further influence protocols. Participation in the independent and geographically diverse National Turfgrass Evaluation Program (NTEP) is also a requirement for the approval process.

Varieties were tested for a number of low-input factors including drought tolerance, reduced chemical usage and turf quality under adverse conditions. To become an “A-LIST Approved Variety,” a variety must have demonstrated superior performance in A-LIST trials as defined by:

- The top LSD group for drought tolerance as measured by percent green cover for each of two years in at least two locations.

Perennial ryegrass	Fine fescues	
PR 301	<i>Hard fescue:</i>	Clarinet
Fastball RGL		Jetty
Stellar 3GL		SR 3150
Apple SGL		
Seabiscuit	<i>Strong creeper:</i>	SR 5250
PR 193		Chorus
Banfield		Navigator II
Wicked		
Sideways	<i>Chewings fescue:</i>	Radar
Thrive		Conductor
SR 5130		Compass II
Grandslam GLD		
Man o' War (Promising)		

- Acceptable or better turf quality for each of the two years in at least two locations.
- Have been entered into an NTEP trial for the species. For new cultivars that have met the approval standards for performance in A-LIST trials, final approval will be withheld until the cultivar(s) have been entered into an NTEP trial

The A-LIST is an independent, non-profit, industry initiative, fostering development of sustainable turfgrass

varieties and related products that perform their function with less maintenance inputs, thus benefiting the environment. A-LIST monitors a voluntary evaluation program including metrics like water conservation, reduced fertility and traffic, heat, and drought stress tolerances, all with no fungicide or insecticide applications. Products that meet the acceptance criteria can utilize the A-LIST Approved symbol in their marketing and receive the A-LIST Approved tag for use in packaging.



Redexim Rink DS 3800 Disc Spreader

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



New ECO 600 topdresser attachment

The ECO 600 topdresser attachment is unique in Ecolawn Applicator's line of broadcast topdressers. Its New Generation ECO 600 uses PTO drive, precise zero-

turn technology, great visibility with frontal discharge and counterweight mechanisms for better weight distribution and stability. This makes handling heavier products feasible without sacrificing maneuverability or ease of operation. Whether applying compost, sand, soil or a custom blend to existing turf, the ECO 600's larger capacity hopper (22 cu. ft.) and out-front design allows professionals to broadcast bulk material in a 180-degree arc, making topdressing quick, smooth and effortless.

Ecolawn



Turfco Mete-R-Matic XL

Turfco's Mete-R-Matic has been the industry's topdressing leader since 1961, with a patented ground-drive that ensures drop rate remains consistent, and the patented Chevron belt that evenly spreads any material from wet sand to crumb

rubber. The XL adds to the Mete-R-Matic legacy with a capacity of 2.25 cubic yards so operators can cover more ground faster and can spend longer on the job before refilling the galvanized steel hopper. It features Turfco's signature durability and ease of operation, as well as a three-year warranty that includes the belt.

Turfco



Toro ProPass 200 topdresser

The innovative Toro ProPass 200 broadcast-style topdresser offers a variety of cost-saving features including the unique four-wheel walking beam suspension that allows all four wheels to stay in contact with the ground regardless of terrain. The drop zone system ensures an even application, and the smooth belt eliminates load shifting to prevent material from escaping. Additionally, the 21 cubic foot hopper capacity level ensures high productivity and the capacity to finish a job with minimal stops. Available in vehicle-mounted and towable models, the ProPass is a highly versatile and productive topdresser.

The Toro Company

Campey Imants' Speedresser

The Speedresser from Campey Imants, available in the 18H model and the larger 24H, is a bulk drop-spreader designed to handle all top dressing material including fiber sand, making it a versatile machine for use on sports fields and golf courses by club staff or contractors. The unique aspect of the Speedresser is the four Ultra Trac floatation tires on a pivoting axle that massively minimize the risk of turf damage and compaction. This feature is especially important when working on a pre-existing surface, as the operator can do so in the knowledge that the turf isn't suffering any adverse effects. The machine is either



driven hydraulically or from the PTO depending on the model, but both work via an agitator and twin rollers. The high work rate of the Speedresser enables the spreading of dressings up to depths of 5/64 to 3 inches in one pass.

Campey Imants



ADVANTAGE topdressers

ADVANTAGE topdressers from TurfTime Equipment have a capacity range of .75 cubic yd. to 7.5 cubic yd. The long hopper of the ADVANTAGE topdresser allows faster loading without spilling. Looking for the best topdresser to fill bunkers, sand-dress greens, apply compost, repair washouts, apply mulch for erosion control, level low spots, maintain paths and even grass runways? TurfTime's topdressers are designed to spread wet or dry materials allowing a very light dusting or a heavy application. The unique configuration of the belt and metering gate eliminates bridging and delivers a consistent flow of material to the spinners. Like a drop spreader? Adjust spinner and belt speeds to get a narrow drop application, or to broadcast the material over a wide area, all with the same topdresser.

TurfTime Equipment



Bannerman BTD-20 Turf Topper

The Bannerman Turf-Topper (BTD-20) is the original big capacity, precision-built topdresser designed especially for sports turf maintenance. Engineered for speed, accuracy and uniform dispensing of material, this topdresser will handle any combination of sand, loam, peat moss, manure or fertilizer, spreading to a desired depth of 1/4 to 3 inches. The reinforced steel box has a capacity of 3-4 cubic yards, with a conveyor floor that is driven by



Strength & Speed

Get the job done properly and fast

Campey Imants Speedressers are an extremely highly versatile range of topdressers, achieving precise results, whilst improving productivity. Their high work rate enables the spreading of dressings from 1/8" to 3" in one pass.



Distributed throughout North America by Aqua.Aid www.campeyimants.com or email info@campeyimants.com

hydraulics with over 20 calibrated speeds. The tractor PTO ensures a continuous and uniform flow of material through the contra-rotating spreader drum, breaking up any lumps and ensuring a fine and uniform texture.

Bannerman



Earth & Turf MultiSpread

The Earth & Turf LLC product line includes its MultiSpread model 320, a 1-cubic yd. topdresser spreader with exclusive, wide-spread beater that spreads topdressing materials, infield mix, calcined clay, and grass clippings. With a convenient light-material sides option, available for dealer or customer installation, this topdresser virtually doubles its capacity, especially great for spreading light compost to improve turf quality! Overall height with light-material sides, plus narrow overall width, allows operators to reach in easily from either side when loading. Maximum load capacity using the light material sides is 3,600 lbs. Two-wheel ground traction drive is standard. Hydraulic drive is available as an option, offering benefits for owners of tow vehicles with remote hydraulic valve and minimum of 6 GPM flow. With hydraulic-drive, apron and beater speeds are independent of ground speed, each infinitely and independently adjustable, providing excellent spreading flexibility.

Earth & Turf Products, LLC

WFR spreader from Lely

A hopper capacity of 600-800 lbs. makes the Lely Ground Driven WFR ideal for use on golf courses, sports fields, parks and green areas. Lely spreaders feature a force feed mechanism that can achieve spreading



Lely Ground Driven WFR

accuracy up to 52-ft wide and offers the flexibility of being compatible with a workman, UTV, tractor or most other power units. Along with a forward speed of 4.5 mph, the Ground Driven WFR incorporates a unique differential gear system, which allows the tires to turn independently. This design prevents turf damage on the most sensitive areas and offers an even application, even on turns. All Lely spreaders carry a two-year limited warranty and can be outfitted with several accessories.

Lely Turf

Terra Spike XF aerifiers

The Terra Spike XF deep aerifiers by Wiedenmann have revolutionized turf care and set new standards with regard to speed, productivity, depth, and hole quality. The XF (eXtra Fast) is unique in that it can aerify at a depth of 8½ inches at the speed of a shallow aerifier. The exclusive twin drive transmission can produce square hole spacing of 2½ and 5 inches with a forward travel speed of 1.2 and 2.4 mph,



respectively. The quickset feature of the central depth adjustment and the central angle adjustment allows depth and angle adjustments to be performed on the fly, thus



Newstripe HashMark Master II

obtaining optimal aeration results. The shock absorbing systems, VibraStop and PowerPack, remove any vibrations resulting from the high aeration speed. The XF offers an optional hydraulic depth adjustment, windrow, rotary brush, and a variety of needle tine holders.

Wiedenmann North America, LLC

New HashMark Master from Newstripe

With the release of the revolutionary new HashMark Master II, Newstripe has done it again, this time in an even bigger way. Newstripe's HashMark Master II is the second installation in the HashMark Master series. The latest version unleashes the capacity to work on both high and low-pressure striping machines. This unprecedented enhancement makes what many consider the best hash mark painting machine in the industry, even better. Like the original version, the HashMark Master quickly attaches to most Newstripe walk-behind striping machines. Using the machine's own spray gun, one person can paint hash marks five times faster than most other methods. The operator follows the automatic measuring guide from one hash mark to the next, paints it and moves on. It is that simple.

Newstripe, Inc.



fds 9200, 6000 & 4600 series

Wood Bay Turf Technology's fds 9200, 6000 & 4600 series is endorsed by Don Follett, the Baltimore Ravens Director of Fields & Grounds. Quickly revives old and compacted synthetic turf to get the spring back into the crumb rubber topdressing in one easy pass. Approved by synthetic turf manufacturers/installers; soft spring tines do not pull up the fibers like other stiff spring machines. For natural turf, high-speed dethatching after winterkill and repair flood impact zones; also for efficient and effective turf preparation for overseeding. Machine is a less intrusive alternative to verticutting

with variable tension settings for use on different areas of football fields. Evenly spreads topdressing or sand and/or rubber infill; and increased thatch removal for healthier turf, the fds tines relieve surface compaction to help water, air and fertilizer penetrate the rootzone quickly.

Wood Bay Turf Technologies



Two-wire for ICC2 controllers

Underhill International has introduced a next generation 2WIRE Decoder Module that is fully compatible with Hunter Industries' new ICC2 commercial controller, expanding its capabilities to two-wire operation. The 2WIRE Decoder snaps directly into the controller module slot and converts an ICC2 to two-wire operation for new irrigation installations or hybrid multi-wire/two-wire system expansions. Underhill 2WIRE Decoders work with all ICC2 models, including plastic, metal and pedestal cabinets. They can convert the 32-station ICC2 to a 48-station two-wire system. Standard irrigation wire can be used, and, with Underhill's exclusive Decoder Modules, grounding is not required along the two-wire path. In a two-wire system, each valve/field decoder has a unique address that identifies it to the controller. The address signals and 24 VAC power are sent over the same pair of two wires, telling each valve when to open or close.

Underhill International

2018 DUES INCREASE

The STMA Board of Directors approved the Membership Committee's recommendation to increase dues 15% starting in 2018.

The increase will be used to fund two initiatives: public relations and the redesign of STMA.org.

The Membership Committee has been analyzing the dues structure, fees, and the corresponding benefits, and relayed to the STMA Board that these are out-of-balance; thus, their recommendation for a slight increase. It has been 10 years since the Sports Turf Manager category increased from \$95 to \$110, and commercial companies have not seen dues increase for 17 years.

For comparison, the NRPA individual membership is \$170, and GCSAA's Class A golf course superintendents' dues are \$380 annually.

STMA is working with Buffalo.Agency to expand awareness of the association, its members, and the profession to a wide range of audiences. Buffalo uses public relations, news releases and social media to gain recognition with coaches, players, employers, fans and the general public.

The second program that the dues increase will help to fund is the complete redesign of STMA's website, STMA.org. FusionSpan, the developer, has completed its discovery phase and is now working on design and functionality. The new site will roll out in January.

THE NEW DUES AMOUNTS ARE AS FOLLOWS:

Sports Turf Manager	\$130
Sports Turf Manager Associate	\$85
Academic	\$110
Commercial	\$60
Affiliate	\$340
Commercial Associate	\$85
Student	\$30
Retired	\$60

Field of the Year entries due Oct 15

Gain recognition for you and your facility from STMA. Submit to win a Field of the Year Award (FOY). This program annually awards the top fields in five sports and three categories of membership. Submit an application featuring a natural grass football, baseball, softball, soccer or sporting ground (non-traditional) field. In addition to sport, applications are judged within a specific category: schools/parks, college/university, or professional field.

The application is detailed, but easy-to-fill-out on line. In addition to the application, scores from four Playing Conditions Indices (PCI) are required: three in-season and one off-season. To be considered for an award, the field must have had two seasons of play (can be concurrent with two different sports) and include a maximum of 30 photographs.

The STMA Awards Committee independently judges the submittals. Within the application, there are several "tips" from the Committee on how to submit a winning application.

They give specific advice on photos:

"The Committee encourages creative photos, photos that show the versatility of the field, display unique characteristics of the field, and photos that show the unique talents of the crew. Focus on issues specific to your field that tell a story; issues such as drainage, traffic, weather, etc. Provide before and after shots. Do not simply provide



“beauty shots” of your field, as they do not reflect the true struggles and triumphs of you and your crew.”

Each award winner receives:

- Plaque recognizing the field and the Sports Turf Manager
- Complimentary registration to the STMA 2018 Conference
- Recognition during the Annual Awards Banquet during the Conference

■ 3 nights of lodging, excluding incidentals, at the STMA Conference

■ STMA signature apparel for the winning sports turf manager and their crew

■ A feature in an issue of *SportsTurf* magazine.

The deadline is October 15. Since it falls on a Sunday, STMA will accept submittals until close of business (5 pm) on October 16.



Version 2.0 goes live

The STMA Environmental Committee has introduced an updated version of its Environmental Facility Certification Program. After careful review of the program’s full first year, the Environmental Committee determined that some changes were needed to the online instrument, primarily to clarify questions.

In the instructions, the “N/A” response was redefined for test-takers so they better understand how that differs from a “No” response.

A few questions in the Fertilization, Pesticides/Integrated Pest Management, Shop Buildings and Storage, and Composting sections were reworded. In addition to some rewording of questions in Irrigation and Water Quality, a few informational questions were added that will help to qualify answers reported later in that section. Five sections had no changes.

The program initially debuted in June 2016. It involves a written assessment “self-test” that a sports field manager fills out electronically and submits to STMA. As with its Certified Sports Field Man-

agers’ program (CSFM), a passing score is 80% on each of its 10 sections. When that is achieved, the sports field manager arranges to have his or her best management practices validated by an approved attester, who can be an academic in turfgrass management or a CSFM. The attester does a walk-through of the facility with the sports field manager and electronically submits confirmation of the environmental practices in place.

As of August 1, 25 facilities have achieved Environmental Facility Certification with four additional facilities in the attesting process. Facilities and the sports field managers are recognized at STMA.org and receive their choice of promotional material, either a banner or a plaque.

The certification is valid for 3 years. To recertify, the process needs to be repeated. There is no cost to take the assessment. When the attester validates that the practices are in place, the facility is assessed a \$100 charge.



Q&A with DR. GRADY MILLER

Professor,
North Carolina
State University

Questions?

Send them to Grady Miller at North Carolina State University, Box 7620, Raleigh, NC 27695-7620, or email grady_miller@ncsu.edu

Or, send your question to Pamela Sherratt at 202 Kottman Hall, 2001 Coffey Road, Columbus, OH 43210 or sherratt.1@osu.edu



The root of the question

For my first “Q&A” column, in the September 2000 issue of *SportsTurf*, I answered a question related to topdressing football fields with DOT sand compared to using calcined clay products. Seventeen years later, this column makes my one hundred and first “Q&A.” Here are six of my own questions and answers related to some memorable columns. Grady

What are the most asked questions?

The most common sports turf questions I get are associated with weed control, grass selection, and use limitations of fields. So it is no surprise that I have written several columns related to these three subjects. It is a rare week that I do not get at least one weed identification or weed control question. With cameras now on every cell phone, many questions sent via email or texts are now accompanied with pictures. In the last decade a number of new bermudagrass cultivars and ryegrass (overseeding) cultivars have been introduced. The result has been a steady stream of “what is best turfgrass?” questions. On two occasions, (most recently, March 2017) I have directly addressed field use limitations. Over the years, many of the “Q&A” columns have indirectly addressed ways to increase field use with specific turf management practices. I have had so many requests on this subject that I wrote a NC State extension publication on the issue so I can easily send it out when I get related questions.

What was the hardest question to answer?

Well, that may be the one related to what to do when there is blood on a field (July 2010). Many of the columns are based on turfgrass research, rooted in the experiences of field managers, and sprinkled with a bit with opinion. The blood issue required me to get outside my turf world and talk with medical personnel about a complex medical and social issue. I mention the social aspect since people’s perception of blood-related viruses/illnesses is relevant. Blood on a field can impact people other than the one injured. It was a great question and one that deserves consideration by field managers so they are prepared to deal with an incident.

What was the most controversial column?

I have never received what I would consider hate mail due to this column, but there was one column back in 2003 that did result in me getting some harsh criticism. In the August issue that year I wrote about athletes using less aggressive cleat designs on their shoe bottoms to reduce field damage. I actually had some nice data for the article to support my suggestion, but obviously I touched a nerve with some readers with that story. Within a few days of publication, I had a few irate individuals send me critical emails as well as a phone call telling me I

was an idiot for suggesting players wear anything other than what they wanted/needed to wear. The caller actually called twice. Seems he thought of a few more adjectives he wanted to use to describe me.

What was the most unusual question?

Back in January 2013 I had a phone call from a coach here in NC that had a significant problem and asked if I could help. His varsity football/soccer field had just been condemned for 6 months by the County Health Department. His seniors would have no home games that year. This was all the result of a prank when students released the school’s Ag Department goats onto the field. A recent incident of E. coli at a petting zoo that resulted in a young person’s death had the county being overly cautious. This decision was supported by the State Health Department. I had to spend many hours researching before writing the column, which was being sent to the Health Dept. My suggesting it was safe did not change the outcome.

Why is grass green?

Yes, I answered that question in the April 2004 issue. It was part of a special “No such thing as a bad question” column to briefly address a number of funny, thought-provoking questions.

What has been the most insignificant question that just will not go away?

There has been one nerdy question that I thought answering once would be enough, but I continually get emails on the issue. It relates to the necessary wall height of a baseball outfield to play a certain distance (e.g., the Green Monster at Fenway Park). It seems a general Google search on the issue turns up the SportsTurf October 2004 “Q&A.” Math is not easily understood by all plus there is symbol typo in an equation [Editor’s note: Sorry, Grady!], resulting in some confusion for some readers. Generally high schoolers working on an assignment want me to generate data for them. I generally remind them that it is their homework, not mine. I did mine on that subject already.

I feel very lucky that I was asked to respond to all your questions that have been printed here in SportsTurf the past 17 years. I look forward to the questions in the years to come. Thanks for reading. **IST/**

SAFE FIELDS FOR ALL

that's the root of our mission



7 MILLION
SPORTS AND RECREATION-
RELATED INJURIES OCCUR IN
THE U.S. EACH YEAR

62% of injuries happen during practice



50%

IN KIDS UNDER THE AGE OF 15

AS AN STMA MEMBER, SAFE IS YOUR CHARITABLE FOUNDATION. We work to enrich communities by championing safe, sustainable fields for all athletes – providing research, educational programs and scholarships to help meet the industry's need for more qualified sports turf managers.

SO FAR, WE'VE GIVEN OVER
\$225,000

in scholarships & travel reimbursement to 120+ students



of SAFE scholarship recipient graduates work full time in sports turf management

TOGETHER, WE CAN DO SO MUCH MORE. **OUR GOAL: \$1 MILLION OVER THE NEXT 5 YEARS FOR NEW PROGRAMS AND RESEARCH**



80% of the 2,600 STMA members from 33 chapters around the country have never donated

We rely on individual donations for **60%** of our total funding

PLEASE DONATE TODAY

SAFE

The Foundation for Safer Athletic Fields for Everyone

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WWW.SAFEFIELDS.ORG

Sources: Centers for Disease Control and Prevention (www.cdc.gov) & The American Academy of Orthopaedic Surgeons (www.aaos.org)

Innovative

turf solutions

for sports turf



Perennial Ryegrass

Unrivaled Wear Tolerance

- Superior Traffic Tolerance and Persistence
- Produces Determinate Stolons for Regeneration
- Strong Disease Resistance and Insect Tolerance
- Outstanding Summer Performance



Super Over Seeding

Ultimate Overseeding Performance

- Improved Dark Green Color
- Fine Leaf Texture/Improved Density
- Easier, Natural Spring Transition
- Reduced Vertical Leaf Growth